

**HEALTH AND SAFETY COMPLIANCE IN THE MINING SECTOR**  
**A CASE STUDY ON ANGLOGOLD ASHANTI PROJECTS**

By

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## DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institution except where due acknowledgment is made in the thesis.

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## **ABSTRACT**

According to the ILO and WHO estimates, every year, more than 12 million people die of workplace related diseases and accidents. Most African nations are battling with safety and health practices as few endeavors from the companies and the governments are remarkable. The study assessed the level of compliance with health and safety standards on Anglo-Gold Ashanti Projects. With respect to the health and safety standards at Anglo-gold Ashanti, the study revealed that provision of safe workplace, provision of adequate equipment, materials and personal protective equipment (PPEs) to enable employees to carry out their work safely, provision of notices on all health and safety measures to the workers, organization of safety induction, orientation and refresher courses by my organization at the workplace, safety assurance by fellow workers were the common standards found at Anglo-gold Ashanti. The study further discovered that the level of compliance was moderate due to compliance to the following standards: the organization makes sure that they are not subjected to any unreasonable risks in the workplace; the organization conducts periodic reviews to assess health and safety standards in the work place, whether inspections at the workplace in relation to health and safety are conducted by both the trained management and representatives from the employees and there is an effective incident reporting procedure that is known by employees. With the findings of the study in mind, it is recommended that education should be done on the regular usage of the safety materials at the workplace. The study further suggests that fire drills should be conducted periodically at the workplace to check for emergency responses and preparedness of the workers and systems.

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## **DEDICATION**

I dedicate this work to the Almighty ALLAH for His guidance and support.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the Study**

Mining has positioned itself as an integral part of the economies of most countries. As such, various forms of activities exist during the process of exploitation of natural resources in the pursuit of economic development (Arora et al. 2017). Mining has severally been conceptualized as the removal of minerals from the earth's crust by the activities of man. A more technical perspective conceptualizes the concept as the extraction of valuable minerals or other geological materials from the earth, usually (but not always) from an ore body, vein, or (coal) seam (Baah-Boateng 2018).

The activity has been described as core to the economy of every country because most industries over the globe rely on the supply of such minerals for production of other goods and services. The minerals are taken as raw materials, refined and value is added to them then are later traded for higher economic gains (Conde and Le Billon 2017; Essah and Andrews 2016; Tarras-Wahlberg et al. 2017). The implication of the commitment of most economies to developing their mining sectors suggests that the relevance of mining to the economies of countries cannot be understated.

Africa is no exception to the rapid development of mining activities using advanced technologies. Available statistics suggest that the continent has millions of its workforce being employed across small and large scale mining centers, and these workers usually receive substantive remunerations. The International Labour Organization (ILO) reported that the numerous benefits derived from working in the mining centers makes a lot of people, both from the catchment areas of the mines

and from outside these catchment areas flood in to mining communities to offer their labour for a reward (World Bank, 2009).

Because of the undisputable contribution of the sector to development, most governments do not flinch on their support and commitment to the development of the sector (McMahon and Moreira, 2014). However, despite the numerous benefits posed by the industry to the development of the economies, the negative consequences of the activity on human lives and that of the environment are profound. Most of these negative effects on the human life takes the form of loss of livelihoods and health implications. For example, surface mining in Ghana today involves the use of cyanide, a substance described as highly toxic, with the potential of causing very harmful effects on the environment and human health (Amponsah-Tawiah, 2011; Bansah et al., 2018). Again, the scale of lands available for farming purposes are daily reducing due to increasing degradation of the land surface by mining activities. Similarly, large proportions of the water bodies in these mining areas and their streams are constantly polluted in terms of chemical composition and colour. Also characterizing the evolution of mining is the capital intensive nature of the extraction and refining activities, which leads to labour displacement and instability in family livelihoods and securities (Aboagye 2014; Apeakoran 2014; Baah-boateng 2018).

In view of alleviating these challenges, sustainable livelihood projects are often implemented by the companies that hold the concession of mining for the affected people. These livelihood projects can take the form of crafts and arts industries (Boamah, 2013). Again, some of the projects take the form of physical projects that mitigate their socio-economic losses, such as educational infrastructure, housing infrastructure, educational infrastructure and health infrastructure among others (Bansah et al. 2018; Narula, Magray and Desore 2017; Owen and Kemp 2015).

A new concept which has become very relevant in project management is Occupational Health and Safety (OHS) (Harper, 2014; National Institute for Occupational Safety and Health, 2004; Occupational Safety and Health Administration, 2016). It has severally been reported that incorporating occupational health and safety standards into a project enhances its chances of success. In effect, eliminating the various risks that are associated with non-inclusion of OHS measures proves to be more beneficial, especially when such steps are taken from the very commencement stage of the project. Notably, OHS has been described as not only integral at the commencement stage of the project, but also throughout the entire life cycle of the project (Colby and Corwin, 2016; ‘Fundamental principles of occupational health and safety’ 2013; Sousa, Almeida and Dias, 2014). The notion, has since its inception received efficient adoption across project developers, project engineers and all other major stakeholders of projects, including the end-users of the projects.

Just like every project, the successful implementation of these livelihood projects requires an adequate and appropriate adherence to Occupational Health and Safety standards for successful implementation (Herrera-Sánchez, León-Pérez and León-Rubio, 2017). With AngloGold Ashanti implementing several livelihood projects in the Obuasi Municipality as a way of ameliorating the conditions of the residents affected by their mining activities, a logical basis is provided for investigating the extent to which OHS strategies are adopted in the implementation of their livelihood projects, so as to set the tone for further assessing the contribution of such rates of adoption to the success of livelihood projects. The current study tends to assess compliance with health and safety standards on Anglo-Gold Ashanti Projects.

## **1.2 Problem of the Statement**

The positive and negative effects that mining has on the lives of the residents of mining communities have been well-documented across literature. Interestingly, while the positive benefits have been described as more economical in nature, the negative benefits on the other hand have been much directed towards the lives of the people, as well as the environment in which they reside (Carvalho, 2017).

Most African organisations fail to protect their workers fully as part of cost cutting measures at the mines which result in numerous accidents, Health and Safety hazards and diseases as emphasis is laid on productivity and profitability (International Labour Organization, 2014). A 2012 Fourth Quarter Police Reports indicates that statistics on workplace injuries show that in every two working days throughout Ghana, someone dies or is injured as a result of industrial accidents or poor safety conditions at workplace (Bentil, 2018).

According to the ILO and WHO estimates, every year, more than 12 million people die of workplace related diseases and accidents (International Labour Organization, 2014). More than 160 million workers fall ill every year owing to workplace hazards (International Labour Organization, 2014). As confirmed by Hentschel et al. (2002), the greater part of the mining exercises is known to need safety guidelines, attention to hazard innate in mining, fortification of the mine security necessities just as access to legitimate mining hardware. The hazard factor in the mining gives higher Occupational Health and Safety risk which result in ominous working circumstances.

Obviously, one percent or less of institutional and national research concentrates on issues regarding practices of health and safety (Zacharatos, Barling, & Iverson, 2005). Aside from little studies on health and safety matters, all in all, there is additionally an intense absence of writing

on these issues. Especially, most African nations are battling with safety and health practices as few endeavors from the companies and the governments are remarkable (LaDou, 2010). It is in view of this existing lacuna that this research seeks to assess the compliance with health and safety standards on Anglo-Gold Ashanti Projects.

### **1.3 Research Questions**

1. What are the Health and Safety Standards of Anglo – Gold Ashanti?
2. What is the level of compliance with the Health and Safety standards on Anglo-Gold Ashanti projects?
3. What measures can help improve the level of compliance with Health and safety standards on Anglo-Gold Ashanti projects?

### **1.4 Aim and Objectives**

#### **1.4.1 Aim**

The main aim of the study is to assess compliance with health and safety standards on Anglo-Gold Ashanti Projects.

#### **1.4.2 Specific Research Objectives**

Specifically, it seeks to:

1. To identify the Health and Safety Standards of Anglo – Gold Ashanti
2. To assess the level of compliance with the Health and Safety standards on Anglo-Gold Ashanti projects.
3. To identify measures to improve the level of compliance with Health and safety standards on Anglo-Gold Ashanti projects.



### **1.5 Scope of the Study**

The study will cover an in-depth exploration of the knowledge of workers on Occupational Health and Safety standards, as well as the various determinants of their levels of compliance. The effect of their adherence to these standards will be covered, and strategies that can be used to enhance compliance among them will also be investigated. The study will be carried out in the Obuasi Municipality, which is located in the Ashanti Region of Ghana, with Obuasi as its capital. The study tends to adopt quantitative research approach in which self-administered structured questionnaire will be used to interview staff, management personnel and stakeholders of Anglo-Gold Ashanti in the Obuasi Municipality of the Ashanti Region of Ghana. The research is limited to Anglo-Gold Ashanti in the Ashanti Region of Ghana. Data will be collected from the senior staff and junior staff of Anglo-Gold Ashanti.

### **1.6 Significance of the Study**

The global significance of this study cannot be understated. Evaluating the pace of compliance of investigating organizations on Occupational Health and Safety benchmarks which basically will improve the achievement and maintain ability of projects and enhance the manageability of communities is basically in line with the Sustainable Development Goal 11 concentrates on advancing reasonable urban communities and cities (Bahadur, Gray, Nadeau and Atlas, 2016). Evidence that will be gathered from the field will contribute towards expanding the frontiers of knowledge for the promotion of the global quest of building sustainable cities.

Again, with the mining sector of every economy having severally been described as integral to the boosting of GDP and thereby promoting economic development (McMahon and Moreira, 2014), further evidence on the extent to which project workers in mining communities adhere to OHS standards and its contribution to project sustainability will contribute towards improving the sector.

In effect, this research will significantly contribute towards generating much needed information that can be used by the Ministry in charge of mines and natural resources in Ghana to develop the sector's contribution towards livelihood development and sustainability in affected communities.

In addition, a study of this nature will help in filling academic gap in the area of studies relating to the mining sector of Ghana. Most studies on mining and livelihood projects in Ghana were done in isolation, with very little or no focus on how activities of these companies are regularized in their adherence to OHS standards. Previous studies on the phenomenon in Ghana includes the works of Hilson and Banchiriga (2009) who probed into the extent to which livelihood projects are alleviating poverty in mining communities. Other studies were much focused on the characteristics of mining, as well as the contribution of mining companies to livelihood project. These studies are largely limited in the extent to which they assess compliance to OHS among mining workers, and the contribution to project success. The relevance of this study in contributing towards essential scholarship in Ghana can therefore not be understated.

In the long run, knowledge that will be generated by this study will go a long way to contribute towards policy formation in the mining and that can shape economic development in the country.

## **1.7 Methodology**

The study will make use of a survey research design. To achieve the purpose of this study, quantitative research methods will be used. This design will leverage on the strengths of quantitative methods of data collection and analysis. The target population for this study will be workers of AngloGold Ashanti in the Obuasi Municipality. Simple random and stratified sampling techniques will be utilized for the selection of the sample for the study

Quantitative data for the study will be collected on the level of knowledge of project workers at AngloGold Ashanti on Occupational Health and Safety Standards, as well as the extent to which project workers at AngloGold Ashanti comply to Occupational Health and Safety standards during the implementation of livelihood projects. The primary data will be collected using set of pre-tested structured questionnaire. Descriptive statistics such as standard deviations, means, frequencies and relative importance index was used to analyse the data. Tables and charts were used to present the findings from the study. The findings were further discussed with previously done studies (Sakara, 2000).

### **1.8 Organization of the Report**

The study report will be organized under five (5) chapters. The first chapter will present the background of the study, presentation of the research problem, the research questions and objectives and the relevance of the study. The second chapter will review essential literature on the subject being explored. It will establish the theoretical and conceptual basis for the study, as well as detailing out empirical literature on the phenomenon of adoption of OHS among livelihood project workers.

The third chapter will present a description of the study approach and methodology. It will define the logic behind the methods chosen in undertaking the research, as well as description of units of analysis, methods and techniques of data analysis and presentation. Chapter Four will focus on analyzing and discuss data obtained from the field. Finally, Chapter Five will summarize some key findings from the study. Based on the findings, appropriate conclusions and recommendations will be made to improve the success of livelihoods of residents of resettled communities in the Obuasi municipality, as well as Sub-Saharan Africa.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The empirical and theoretical literature in relation to the safety and health practices in an organization are reviewed in this section of the thesis. With this in mind, the causes of safety and health hazards and safety and health concept in the mining sector will be discussed. In addition, assessment techniques of safety and health as well as the measures to aid in enhancing compliance to safety and health will also be discussed. The review of literature, finally builds a conceptual framework that provides a linkage of the main concepts of the study.

#### **2.2 Conceptual Review**

##### **2.2.1. Concept of Occupational Health and Safety**

Occupational health and safety (OHS) is a multidisciplinary concept touching on issues relating to such disciplines as medicine, law, technology, economics and psychology (Leka, 2003 cited in Amponsah-Tawiah and Dartey-Baah, 2011). As a wide based idea, safety and health embodies the psychological, physical well-being and emotional of the employee in connection to the directions of his work (Amponsah-Tawiah and Dartey-Baah, 2011). The concept hence takes into account the totality of the wellbeing of the worker in the line of duty, as well as how the workplace affect the ability of the worker to function to their optimum without compromise to their health and continuous survival. Health is a constructive idea that incorporates social and individual assets just as physical capacities (Nutbeam, 1990). It has been conceptualized as the capacity to have and to arrive at objectives, address individual issues and adapt to regular day to day life (Raphael, Brown, Renwick and Rootman, 1997). Thus work can be said to be occupationally safe and healthy if it sustains and maintains the ability of workers to reach goals being organisational and personal wise. World Health Organization (1986), shares in this

thought by considering health to be a condition of complete physical, mental and social wellbeing and not simply the lack of illness.

The concept thus goes beyond just observable defect resulting from work to envelop all facets of the worker's life. Amponsah-Tawiah and Dartey-Baah, (2011) supported this notion by opining that the concept of OHS is a broad based concept, typifying the psychological, physical wellbeing and emotional of the laborer in connection to the manner of their work. This along these lines makes it a significant discipline adding to the accomplishment of any company.

Over the years the concept of OHS has metamorphosed from the traditional focus on biological, chemical, and physical exposures or hazards, disorders, diseases and injuries to drawing some attention to psychosocial risks and some employer-employee relationships, this predisposes workers' to hazards at the work place. This reorientation has not however caught up well with most developing countries, due to the insufficient understanding of OHS issues as they relate in the developing nations' setting (World Health Organization, 2007). Be that as it may, medical problems including the physical space of work; kinds of occupation and their impact on wellbeing; work pressure, work plans, and other psychosocial issues in the workplace influencing work (Warr, 1987 referred to in Amponsah-Tawiah and Dartey-Baah, 2011) are on the whole being given some consideration in ongoing OHS activities especially in developing nations.

OHS though a very young concept in its development, has been with man since the day work was realised. The concept hence should not be new to practice as it is to theory. It is against this backdrop that this study wishes among other things to see how issues of OHS handled in the mining sector using Anglo-Gold Ashanti as a case which depict a vibrant embrace of the underlining concepts on the subject matter or otherwise.

### **2.2.2 Definition of Health and Safety Standards**

Safety and health standard is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment (International Labour Organization, 2008). This area is essentially immense, enveloping countless disciplines and various working environment and natural perils. A wide scope of structures, aptitudes, information and logical abilities are expected to organize and actualize the majority of the "building blocks" that make up national OSH frameworks so security is reached out to both laborers and the earth.

Health and safety has developed progressively and persistently because of social, innovative political and economic changes. As of late, globalization of the world's economies and its consequences have been seen as the best power for change in the realm of work, and thusly in the scope of health and safety, in both positive and negative means (International Labour Organization, 2008). Advancement in global trade, fast innovative advancement, huge improvements in vehicle and correspondence, changing patterns of business, changes in company's practices, the changes employment patterns, and the size, structure and life cycles of businesses and of new innovations would all be able to produce new types and examples of dangers, exposures and risks. Demographic variations and populace movements, and the resulting burdens on the global setting, can likewise influence health and safety in the realm of work (International Labour Organization, 2008).

### **2.2.3 Importance of Health and Safety Standards**

It is in the employees' interest and their agents to acquire a living, and furthermore to get their old age in safe and healthy state of affairs (World Health Organization, 2007). These concerns are not opposing but rather integral to organization interests. Companies have customarily assessed their wellbeing and safety as far as the primary concern (Robin, 2003). In any case,

with past research revealing gigantic monetary and human expenses related with undesirable companies (Cooper, 1994), human resource experts have started to situate solid working environment projects and exercises as a source of competitive edge to shorten expanding health services costs; aid the fascination, procurement and retaining of workers; better deal with the business worker relationship; address the issues of an undeniably various workforce, and lift worker confidence (Fulmer, Gerhar and Scott, 2003).

The objective of numerous institutions has been to abstain from being unhealthy rather than streamlining wellbeing. There is in any case, a developing acknowledgment that financial health connects with worker health investments (Goetzel, Guindon, Turshen and Ozminski, 2001), a condition which is progressively putting wellbeing and safety matters at the front part of the bargain, and organizational structure determinations. In fact, the expenses of dangerous, unpleasant and unhealthy working environments are terrible in economic, social terms as well as personal and hence require quick consideration.

The previous years has seen an expanding number of distributions tending to mediations planned for counteracting business related sickness and injury and workers wellbeing (Levitt, Parker and Samuelson, 1987; Miller, Hoskin and Yalung – Matthews, 1987 and Nui, 2002). The increasing concern and interest in working environment health advancement brings up no issues as a money saving advantage examination of the topic is bound to go to support its. The conviction that labor is expandable (Takala, 2000) and that companies can stand to lose a portion of their staff just to be supplanted in the blink of an eye has all the earmarks of being a relic of times of the past. Companies never again can bear to lose experienced and submitted workers through sick wellbeing brought about by undesirable and perilous working conditions as the expense of enlisting, choosing, creating, rousing and holding new workers who take over from experienced workers lost through business related ill-wellbeing stays limitless (Amponsah-Tawiah and Dartey-Baah, 2011). This point is additionally significant for the tasks

of the mining sector; of which risks and hazards they experience become a risk to the endurance of their business.

Others have focused upon the compensation and benefit misfortunes related with working environment wounds, mishaps and illnesses. Levitt, Parker and Samuelson (1987) in their investigation of the US development industry evaluated that such costs added an additional 10 percent to the wages bill. Mill operator, Hoskin and Yalung – Matthews (1987) utilizing a human capital methodology evaluated a compensation misfortune factor for the United States of 20 percent.

Moreover, a company's inability to guarantee work environment safety can expand its immediate and indirect expenses. In 2000, Amweelo led an investigation in Namibia where he recognizes direct cost as costs that comprise of equipment repairs, broken materials replacement, installment of high protection (insurance) premiums, and remuneration to the injured laborer and doctor's visit expenses. The indirect expense incorporates, low efficiency because of lost time by laborers and managers taking care of an injured employee, loss of profit to the injured employee, time and cash spent on preparing substitution laborers just as the harm caused to the reputation of the organization in general society.

Again, poor working conditions can affect the performance of an industry by increasing its operational cost and lowering profitability. An enterprise with a bad record of occupational health and safety may create an image problem that could make it difficult to attract workers and customers alike (Nui, 2002).

Health and Safety in this way stays a significant thought for all companies, especially companies occupied with high hazard activities like the mining, logging, carports and construction enterprises. Great practices of health and safety give a more secure workplace as well as improve worker confidence and efficiency. By seeking after great practices of health



and safety, organizations face less working environment wounds and advantage from higher worker degrees of consistency and upgraded corporate reputation. This lessens the expenses related with delays in production, enrolling new staff and supplanting hardware and stays away from the subsequent vulnerability and outstanding task at hand burdens set on associates. Organizations which endeavor to improve their performance of health and safety make safer work environments, which profit managers and representatives as well as their families, their societies and their economies as a whole.

Considering that working adults spend at least a quarter to a third of their working life at work (Takala, 2000) and the fact that job satisfaction is estimated to account for a fifth to a quarter of the satisfaction in adults, health and safety issues in organizations that comprise the physical, biological, emotional and chemical exposures of work must be of concern to all managers and all other social partners in the workplace especially in the informal small-scale sector.

State economies likewise appreciate the advantages of a flourishing safety and health arrangement as the advantages gathered to enterprises will in general stream down as tax collection and a decrease on other social administrations (e.g., medicinal services offices, social help benefits). An exclusive expectation of health and safety associates with high GNP per capita positively (WHO, 1994). The nations putting most in safety and health demonstrate the most elevated profitability and most grounded economy, while the nations with the least investment have the most minimal efficiency and the feeblest economies (WHO, 1994). Along these lines, dynamic contribution to safety and health is related with positive improvement of the economy, while low interest in safety and health is a drawback in the competition economically (Amponsah-Tawiah and Dartey-Baah, 2011).

Finally, in Ghana, the cost and effect of occupational accidents and hazards cannot be underestimated. The result from a study of a factory in Ghana indicates that the company spent more for compensating workers in the case of accidents and injuries sustained by workers at work, than the loss of man-days (Appiah, 2007). It was revealed that workplace accidents and injuries have consequences for all in the work setting, hence the need to provide safety measures at the workplace. It is however important to identify the predisposing factors leading to workplace accidents and injuries.

#### **2.2.4 Health and Safety Standards in the Mining Industry**

In perspective on outright impediments to well-organized administration of Occupational Health and Safety (OHS), there has been an inception of a dynamic procedure of legitimate change which is planned for bringing a national Occupational Health and Safety (OHS) laws in accordance with current considerations and improvements in health and safety. Ghana's consistence with sanctioned ILO agreement add to fortify and make progressively compelling requirement forces of the mining inspectorate (Bruce, 2006)

Yankah (2012) sets that accommodating fire aversion and firefighting during construction, setting up training on safety and direction for site agents, top administration promise to safety of workers, keeping work environment clean and enlightening mine inspectorates regarding the area of new building locales as critical benchmarks which is essential to improve standards on safety and health on sites. It is evident that setting safety rules into the terms and conditions of agreement for an undertaking, record keeping on sites, and mishap examination and task of safety obligation to all degrees of the board of directors and laborers among others are approaches to oversee safety and health in the Extractive Sector

Bruce (2006) on his part asserted that the Safe Place Strategy (SPS) is one noteworthy system embraced in deliberately overseeing safety and health in Ghana, which depends on the presumption that the materials of work (gear, hardware, substances, safe workplace and so

forth.) cooperating safety and health, particularly having respects to worthy standards of safety and health. In any case, there are cutoff points to this methodology inferable from the dynamic idea of the condition of the components of work, for example, apparatus, hardware, substances and so forth and the human connection with these components (Bruce, 2006).

In illustrating the substance of Health and Safety Management System, Turkson (2006) recommended that Occupational Health and Safety Management System involves an outline of procedures planned for diminishing the recurrence of damage and ailment at work. Along these lines, fruitful usage of the framework requires the commitment of management to the framework, efficient distribution of assets, and a high state of worker cooperation.

Handbook of better workplace (2008) says that Occupational health services may bolster the company in specialized angles like ergonomics, management of safety, work-damage examinations and giving data to new conditions on workplace. Higashi et al. (2006) in their investigation on occupation health services sets that making service framework for all employees and constant appraisal is one of the significant issues in safety and health at the workplace. Furthermore, Husman et al. (2006) propose that health services at the workplace staff ought to study networking and directing abilities in light of the fact that these services need to have better support service framework.

#### **2.2.5 Health and Safety Compliance**

Conduct is characterized as everything an individual does that are perceptible and quantifiable (Vijayakumar, 2007). Safety behavior or conduct depicts the conduct that help safety practices and exercises, for example, giving training on safety and compliance to safety clarifies the major exercises that should be done by workers as indicated by safety and health at the workplace necessities to counteract work environment mishaps (Mahmood, 2010). Safety conduct is the key diminishing the injuries at the work environment and in an impacting the results of the occasion before the wounds or mishaps happened indirectly (Johnson, 2003). A

research has been led by Glendon and Litherland (2001), estimating performance of safety utilizing observation behavior inspecting of basic conduct checklist. Along these lines, worker conduct randomly sampling via observes who were trained assess the extent of perilous working practices, for example, rebelliousness to manual and individual protective equipment practice (PPE).

Compliance to safety is characterized as sticking to safety strategies and doing work in a protected way (Neal, Griffin, and Hart, 2000). Researchers in the past have shown that when workers keep safety guidelines and methods, they are less inclined to be harmed or hurt in a working environment mishap (Clarke, 2006; Neal and Griffin, 2006). By putting on safety hardware or utilizing legitimate safety gear, the workers can ensure themselves while at work, for instance, bringing about fewer mishaps at the workplace all in all in the company.

Compliance to safety is extended from great to poor where comply with safety prerequisites comment as great compliance to safety and not agree to safety necessities comment as poor compliance to safety. The ABC model of behavior by Frederick (1982) as referred to in Abang Abdullah et al., (2005) clarified that conduct is impacted by two particular variables: activators and outcomes. To begin with, is activators that tell individuals what they ought to accomplish for instance roadways sign train the driver to consent as far as possible and the other is activators impact the driver to take alternate route, for example, seeing others surpass the posted speed limit. Faced with these contending activators, the driver will play out certain conduct, which comes to outcomes the driver hopes to pick up or keep away from. Henceforth, the requirement on safety conduct variables plays the essential to energize compliance to safety before the results happened.

As per the administration point of view in safety, mishaps at the workplace are essentially the aftereffect of human blunder (Bottani et al, 2009), which can be decreased when business

owners introduce a legitimate safety framework (Gordon, Flin, and Mearns, 2005). Reliably, this point of view is in accordance with the Occupational Safety and Health Act 1994 which expressly commands that businesses are in charge of guaranteeing the safety of the workers at the workplace. The 1994 Act doesn't make a special case for managers, which implies that businesses in the mining segment are additionally secured by this Act. One way how this can be accomplished is by initiating safety management practices, which allude to the safety related methodologies, arrangements, systems, strategies, and exercises actualized in the company with the point of lessening mishaps and wounds at work (Díaz-Cabrera, et al, 2007; Vinodkumar and Bhasi, 2010).

In view of Vinodkumar and Bhasi's work (2010), management of safety practices are made out of numerous safety related modules. They are the training on safety, commitment from management, laborers' inclusion, safety standards and methods, safety promotion approaches, and safety correspondence and response.

Despite the fact that the OSH Act 1994 doesn't make a special case to any businesses, mining sectors may confront noteworthy difficulties in initiating a complete and organized OSH framework. It is commonly comprehended that a few companies in the mining segment will in general have various limitations, for example, assets. Thus, their alleged safety framework or practices are probably going to be casual and unstructured (Champoux and Brun, 2003; Legg et al., 2015). It is against this scenery that the safety management role in advancing compliance to safety conduct ought to be comprehended. Past researches on the safety management role in promoting compliance with regards to the mining segment are somewhat not enough.

### **2.2.6 Laws on Health and Safety**

The introduction of the International Labour Organisation (ILO) toolkit, with the assistance of the International Occupational Hygiene may be an important step to the implementation of participatory occupational hygiene (ILO, 2009). According to ILO, this approach has been applied within developing countries in Africa and Asia for assessing the needs of small enterprises in agriculture by building on local practices within the limitation of locally available resources. Another experiment to solve the situation in developing countries is the Work Improvement in Small Enterprise (WISE) programme introduced in the Philippines which answers a lot of questions and opens up a number of options in implementing low cost workplace reforms (ILO, 2009).

Moreover, Zalk (2013) states that whatever approach used must aim at reducing work related exposures for employees in large industries, small businesses and agriculture. Utilizing local talents in training, developing and implementing programmes give practical solutions to less developed countries. After almost thirty years of ensuring health and safety at the workplace, report available at the Department of Labour, Kumasi in Ghana reveals the negative attitude of employees as an excuse for frequent accidents in 2011 (Ministry of Health, 2012).

Health and safety practices at the workplace differ among countries with various ways to deal with enactment, guideline, requirement, and motivating forces for compliance. In the European Union (EU), for instance, some states encourage OSH by giving monies as appropriations, awards or financing, while others have made assessment framework motivations for investment in OSH. A third gathering of EU states have tried different things with utilizing working environment mishap protection premium limits for organizations or companies with solid OSH records.

Member states of the EU have authorizing leaders to guarantee that the fundamental legitimate prerequisites identifying with health and safety at the workplace are met. In numerous EU

nations, there is solid participation among business and companies to guarantee great OSH execution as it is perceived this has benefits for both the laborer (through upkeep of wellbeing) and the project (through improved efficiency and quality). In 2013, the European Agency for Health and Safety at Work was established. Members of the European Union have all reordered into their national enactment a progression of mandates that build up least gauges on health and safety at the workplace. These mandates (of which there are around twenty on an assortment of themes) pursue a comparable structure requiring the business to evaluate the work environment dangers and set up preventive measures dependent on a chain of importance of control. This chain of importance begins with end of the danger and closures with individual protective hardware.

The legislature of Ghana has presented Acts (e.g., Labor Act, 2003, Act 651 and Factories, Shops and Offices Act 1970, Act 328) and numerous other subsumed approaches to secure the safety, health and wellbeing of all the employees. The Labor Act, for instance, makes it compulsory for the business to guarantee that each laborer utilized in Ghana works under good, protected and solid conditions (Labor Act, 2003 Act 651, Article 118:1). This arrangement is in consonance with the 1992 constitution of Ghana which expresses that each individual has the option to work under healthy and sound conditions (area 24: 1).

It is necessitated that workers utilize the safety machines, putting out fires hardware and individual defensive gear furnished by the business in consistence with the business' directions (Labor Act, 2003 Act 651, Article 118:3). The businesses' commitment under the Labor Act incorporates setting models to defend the safety and health of their workers, giving individual protective hardware, and giving fundamental data, supervision and consistent training with the degree of education of the workers.

Moreover, the Act expects businesses to report the event of mishaps at the workplace to proper government offices. Workers are committed to practice their activities with sensible consideration as they approach their ordinary employments at their working environments to guarantee their safety and the security of others. The Act leaves the arrangement of principles opened to the carefulness of each business. This perpetually has prompted an incoherent and divided safety and health strategy bodies as various enterprises (businesses) have diverse oversight on safety and health issues in Ghana.

The fracture is much indistinct as Ghana has various offices under various locales which screen various businesses for working environment and safety of the workers. For example, there is a Road Safety Commission yet with little principles, rules and effect on the vehicle business and street users. The Minerals Commission has the Mining Regulations 1970, which contains a few rules in Occupational Safety and Health yet only for the Mining Industry.

Various wounds, sicknesses, property harms and procedure adversities occur at various work environments yet due to under revealing or misclassification because of need or careful gauges, or newness to the current rules, individuals are not regularly in the referred to of such occasions just as their real or potential outcomes. Per the Labor Act 2003, Act 651, Part XV, segments 118 to 120 clearly coordinates businesses and workers in their jobs and obligations in overseeing Occupational Health, Safety and Environment in the country. The Act, nonetheless, isn't explicit on the most proficient method to actualize safety arrangements at the institutional level and about whom to report mishaps and ailments at the workplace to. It isn't clear or doesn't determine what to consider as Occupational Illness. It doesn't determine who to be in charge of guaranteeing the enterprises in Ghana execute restorative activities according to proposals. There is no national body, arrangement nor procedure that oversees safety and health management at the workplace in Ghana.



Given the wide scope of potential and additionally real undesired occasions related with the countless of work group in Ghana from various work settings, there appear to be a missing connection between authoritative or strategy arrangements and use of substance of the different administrative acts and instruments by businesses. The different Legislative Acts in Ghana task the business and the worker to satisfy their role of guaranteeing safety and health at the work setting. The Acts exclusively coordinates managers/workers the same to guarantee safety arrangements however to a great extent neglects to address the 'how' in executing the subjects.

Though Ghanaians anticipate a far reaching arrangement for safety and health practice at the workplace in the country, there is the need to have a system or 'how-to-manual' to fill in as a manual for businesses, workers and administrative bodies intended for enhancing the training, the executives and observing of safety and health at the work environment in Ghana (Froko, Asumeng and Nyarko, 2014, 2015; Amponsah Tawiah, 2013; Pupulampu and Quartey, 2012).

#### **2.2.7 Measures to Improve the Level of Compliance with Health and Safety Standards**

Turner and Lawrence (1965) cited in Cudjoe, (2011) identify some actions to increase the compliance level of occupational safety and health standards. According to Turner and Lawrence (1965) organizations should be able to dominate the hazard at source through design and process engineering, isolate hazardous processes and substances so that workers do not come into contact with them and change the processes or substances used, to promote better protection or eliminate the risk.

In addition to these, the organization in question must provide protective gear yet just if alterations to the structure, procedure or detail can't totally expel the peril, train employees to ensure that they do whatever they can to prevent risks, keep premises and apparatus spotless and free structure harmful substances by building up a decent housekeeping to just as sort out pre-business therapeutic assessments and normal checks those unprotected to risk for the laborers.

Besides, Turner and Lawrence (1965) attested that institutions can to improve the degree of compliances with safety and health guidelines at the workplace by basically guaranteeing that ergonomic contemplations (that is, those concerning the structure and utilization of gear, machines, procedures and workstations) are considered in the particulars of the design, organization of work schedules and training; keeping up and avoiding medication programs which create health norms for each activity and include customary reviews of potential health perils and standard assessments for anybody in danger and keeping up plant and hardware to dispose of the plausibility of hurtful outflows, wiping out radiation risks and controlling the utilization of harmful substances.

There are some strides to be taken to build the viability of safety. That is dodging of negatives where effective safety pronouncement should contain constructive messages not alerts of the horrendous results of activities, uncovering accurately of which the message is routed to the opportune individuals at the purpose of risk and boost of perception where the message is made basic and explicit (Holt and Andrews, 1993).

## **2.3 Theoretical Review**

The main theories used to guide this study include risk theory/defence in-depth theory, accident model based on systems theory and the actively caring model. These were selected for the study because of their practicability in the field of occupational health and safety.

### **2.3.1 Risk Theory/Defence in Depth Theory**

As indicated by Reason (2010), risk has a direction, which goes through relating holes in the layers of guard (defence), boundaries and precautions and on the off chance that it accomplishes a ‘direct flow through’, will bring about a disappointment. Reason demonstrates that a defence in-depth methodology recognizes that all frameworks are error prone and that by arranging layers of defence in depth, companies are given the chance of getting, impeding or reticent risk before any disappointment.

Human risk issues basically follow a comparable direction in that there are both active failures and inactive conditions (over some stretch of time joined with degenerative conditions) that coincide inside the working environment and when these variables meet up they regularly lead to poor health conditions and result in poor profitability results (Defo, 2014). To apply the Defense in Depth theory in a word related health setting, there is the need to investigate four basic health defence layers that can improve the capacity to control health risks.

These are pre-employment health screening; health management (encompassing health scrutiny and evaluations, well-being and non-attendance); injury the management/therapy (Workers Compensation); and exit medicals. Every one of these four key defence layers can "catch, retard or retire risk" so a mistake trajectory isn't accomplished and more critically, the probability of a disappointment or failure is diminished fundamentally (ILO, 2010). For some companies the four basic health layers will in general be overseen by independent divisions and accordingly the data will in general stay in its "storehouse" and not utilized in an all-encompassing perspective for improving wellbeing.

In numerous businesses various health defence layers as of now exist. Instances of these incorporate Pre-Employment Medicals, Health Surveillance Activities, Periodic Medicals, Health Risk Assessments, Wellbeing Programs, Flu Vaccinations, and Employee Assistance Programs (EAP) and Exit Medicals. Whilst they may exist in different combinations, a common challenge is that they tend not to form part of an overall health risk management strategy (Bentil, 2018).

Arranging the majority of the health segments and having a channel between them turns into the way to discharging important, risk-based data that can significantly improve any company's capacity to distinguish health risk patterns and then utilize this data in a positive manner to lessen the probability of poor health results and provide quantifiable business and workers

benefits (Scanlon, Karsh and Saran, 2008). The Defense in Depth model when utilized in a work related health setting enables any company to work in layers of defence to protect against any failure. Failures in this setting can mean recognizable injuries, a misfortune in profitability because of ill-health or postemployment claims.

In the relevance of these selected theories it would be said that the risk theory/defence in-depth theory helped the researcher to identify how the Anglo-Gold Ashanti specifically in the Obuasi Municipality builds its layers of defence to safeguard against identifiable injuries, a loss in productivity due to ill-health or post-employment claims of its workers/staff.

### **2.3.2 Accident Model Based On Systems Theory**

The perspective of this new model, called Systems-Theoretic Accident Model and Processes (STAMP) is that, system theory is a valuable method to examine mishaps, especially framework mishaps. In this origination of safety, mishaps happen when outer turbulences, failures of components, or dysfunctional interactions among framework segments are not dealt with properly by the control framework, which is result from lacking control or application of safety related limitations on the improvement, plan, and activity of the framework. In this specific circumstance, the company understudy is considered as the framework.

Safety at that point can be seen as a control issue, and safety is overseen by a control structure installed in a versatile socio-specialized framework. The objective of the control structure (the management of the mining organization) is to uphold restraints on framework advancement (counting both the improvement procedure itself and the subsequent framework plan) and on framework activity that result in safe conduct. In this system, understanding why a mishap happened requires deciding why the control structure was inadequate. Counteracting future mishaps requires planning a control structure that will uphold the important constraints.

In STAMP, frameworks are considered as correlated sectors reserved in a state of dynamic balance by criticism circles of data and control. The framework in question is definitely not a static structure yet a unique procedure that is constantly adjusting to accomplish its closures, conditions and respond to changes in itself. The first structure must not just uphold fitting imperatives on conduct to guarantee safe activity however the framework must keep on working securely as changes happen. The procedure paving the way to a mishap (loss occasion) can be described as far as a multipurpose input work that disregards to keep up safety as execution changes after some time to meet a perplexing arrangement of objectives and qualities.

Rather than characterizing management of safety as far as forestalling failures in the components, it is viewed as a consistent control undertaking to force the restraints important to confine framework conduct to safe changes and adjustments. Mishaps can be comprehended, utilizing this model, regarding why the controls that were set up didn't counteract or identify maladaptive changes, that is, by recognizing the safety limitations that were damaged and deciding why the controls were deficient in authorizing them. The essential ideas in STAMP are limitations, control circles, levels of control and procedure models, this model informs the study as to how management in an organisation enforces behavior change to prevent accidents among its workers.

With the systems theory specifically with the accident model, the researcher intends to understand how Anglo-Gold organizational structures prevent occurrence of accidents among its staff in relation to their level of compliance.

## **2.4 Empirical Review of Related Studies**

This section of the research considers the earlier works of others on the significance Occupational Health and Safety issues identifying with work in an institution. It analyses the

literature involving to health and safety compliance and the measures to improve health and safety in an organization.

Windapo, (2011) explored the degree of compliance of construction workers to safety and health enactment necessities in the construction industry inside the South African. The research fundamentally inspected whether the construction workers obey to the safety and health Legislation necessities in South Africa and furthermore whether area of site, value of the project, type of building, and attitudinal nature of the site administrator/operator has any effect on the degree of safety and health enactment compliance on construction sites. The purpose for the research originates from contentions by construction associations that there are deficiencies in the adherence by organizations in the construction industry enlisted by the construction associations to the prerequisites of the safety and health enactment in South Africa. The research demonstrated that to improve the degree of safety and health administrative prerequisites compliance on building sites, along these lines lessening fatalities and wounds inferable from the construction business, site directors' frames of mind must be assessed and just site administrators with the essential abilities, limits and style ought to be enrolled for the activity.

Cudjoe (2011) study was on an evaluation of safety and health practices at the workplace on performance of the work at the Tetteh Quarshie Memorial Hospital, Mampong-Akuapem. Being a health organization, the staff, the board, patients and different partners are presented to a few dangers and perils. The research pointed in addition to other things to inspect the impact of safety and health at the workplace on work performances. The research discovered that the current safety and health practices at the workplace at the emergency clinic were lacking. Staff compliance and commitment to safety and health guidelines was additionally

low. It was suggested that administration of the medical clinic establish a safety council and keep up normal observing, assessment and inspection and conduct audits for development.

Akosua Ganson, (2014) assessed the viability of safety and health practices in a company, utilizing Anglo-Gold Ashanti Company Ltd. In the wake of evaluating the adequacy of safety and health practices in AngloGold Ashanti Company Ltd, the study found that in excess of 50 percent of the respondents unequivocally concurred that the company gives a work environment that is safer for all the employees and about 66% concurred that the company make sure that workers are not exposed in the working environment to any irrational dangers and that the company motivates employees to put down close to minor wounds at the work place. In any case, in excess of 50 percent of the respondents emphatically concurred that absence of the commitment from the management, employee's refusal to provide feedback on minor wounds or close to misses and the expenditure include in training workers on safety and health in the company are grave issues. The research prescribed that administration of AngloGold Ashanti ought not just give sufficient protective garments, an observing group should be set up entrusted to go round to check whether the staff truly put on their protective apparel and materials given.

Bentil, (2018) examined the problems and issues related to Occupational Health and Safety at AngloGold Ashanti Iduapriem Gold Mine Ghana Limited, Tarkwa. The findings revealed that though the occupational health and safety policies of the company were adequate and upheld to many of the times, there are reported cases of accidents and incidents which appear on the ascendancy. Recommendations arising out of the study included the need for top personnel of the mining company to strengthen measures to ensure health and safety at the work premises

and increase training programmes on health and safety policies for its new employees and refresher courses for serving staff.

The principle goal of the research was to assess the safety and health strategies and practices at the Electricity Company of Ghana (ECG), Ashanti East Region. The research uncovered that workers regularly experience electrical stuns, conductor cut, burns when they are not very much protected. The research uncovered that planning of safety, observing and usage are done at the different levels at ECG. It was anyway discovered that arrangement on safety and health are not done completely as half of the respondents guarantee that they have not had any training on safety and health at the workplace. This infers a more prominent larger part of representatives at ECG were not following the strategy for absence of knowledge. A circumstance that looks stressing for an organization like ECG. It was prescribed that all recently and existing workers ought to be taught and prepared with the goal that every one of the workers will know about the safety and health issues in the policy. It was additionally proposed that workers ought to be associated with decisions on safety and health issues to induce proprietorship and duty (Donkor, 2012).

The research analyzed the connection between three elements of safety atmosphere (the management responsibility to safety, need of safety at the medical clinic, and pressure for delivery of health service), and their effect on safety behavior revealed by workers. The research tried to analyze if pressure for health service delivery influences the security conduct of medicinal services employees. The outcomes demonstrated that, healthcare employees' safety conduct was adversely connected with the pressure for healthcare service delivery however related (safety conduct) positively to the commitment of management to priority of safety and safety at the medical clinic. There was anyway no noteworthy directing impact of the commitment of management to safety and health need at the clinic between pressure for



health service delivery and safety conduct. These discoveries featured the significance of administrative promise to safety in settings where workers experience pressure for delivery health services and safety conduct are concerned. The research finished by making a few suggestions for the management, further research and public strategy (Anuka, 2016).

Nana-Otoo, (2016) study sought to explore the main safety and health problems faced by manufacturing company's workers in the informal sector in Cape Coast metropolis in order to suggest preventive and control measures. The study revealed a significant institutional gap in the provision of health and safety to informal manufacturing workers. It also showed that occupational health and safety institutions are under resourced in their service delivery. The research further revealed that informal manufacturing sector workers do not have the necessary awareness, technical means and resources to implement health and safety measures. Pursuant to these outcomes, the study recommended that a long-term strategy be developed to address the issue. The strategy should include awareness creation, training for informal workers on the use of Personal Protective Equipment, provision of health and safety services to informal workers and periodic visits by health officials to assess practices of informal workers. Additionally, employers and employees should be encouraged to make conscious efforts in improving health and safety at their work place.

Adjotor (2013), while researching on the impact of Occupational Health and Safety OHS) on the efficiency of work in chosen companies in the Greater Accra district of Ghana, Adjotor (2013) turned out with finding on how the worker's safety and health associate with performance. It is likewise uncovered by Piavi et al. (2008) that because of the shortcomings of the safety and health practices in Ghana, around one thousand 800 and fifty-two (1,852) setbacks were recorded in the year 1998 while this figure expanded to 9,000 600 and sixty-one (9,661) fatalities in the year 2005. This brought about the loss pace of 20.6% in the year 1998 for every one thousand specialists and developed to 23.6% in the year 2005.

As indicated by the research of Stephens, (2017), physical dangers, psychosocial perils and ergonomic risks were observed to be among the normal and most often happening safety and health issues at the workplace in the Ghanaian high mining business area. It was likewise found that commitment of management is adversely related with safety and health practices at the workplace. It was prescribed dependent on the discoveries that steps must be taken by the Ministry of Mines and Natural Resources to decide productive and compelling measures planned for recognizing all the miners in the different areas across the nation. This would especially be useful to both the Ministry of Finance and Ghana Revenue Authority to round up extra unreported income from these miners

Yankah (2012) evaluated the degree of Health and Safety Management practices of chosen Building Contractors in Ashanti Region. Explicit goals of the study included; record the pre-imperative conditions that help the activity of a Health and Safety Management framework, report the present practices of chosen construction firms in Occupational Health and Safety Management, identify the obstructions to the activity of Occupational Health and Safety Management framework in Ashanti Region and prescribe measures to improve the activity of safety and health management frameworks on building sites. The discoveries uncovered that there exist formal safety and health programs for workers on building sites. The outcomes additionally demonstrated very little contrast in the perspectives of the sites administrators and site agents on how regular safety and health trainings were sorted out at the construction site.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

Research methodology refers to the method adopted in carrying out a research (Labaree, 2009). According to Kheni et al. (2008), it is a systematic way applied to solve a research problem. This section manages the procedures that would be utilized to direct this research. This considers instruments for data collection, for example, survey questionnaires. Further, this section explains the way to deal with the study, for example, sampling strategies, collection of data and data analysis methods. Likewise, privacy issues just as reliability and validity of the study procedure and method are talked about in this section.

#### **3.2 Research Design**

A research design is the general arrangement for gathering information so as to address research questions. It includes the particular data analysis strategies or techniques the researcher expects to utilize. A few research strategies can be adapted in a social science study. The choice of strategy according to Leedy et al. (2010) is guided by three questions that dwell on the data needed, location of data, how data will be collected and finally, how data will be interpreted.

The study made use of a research survey design. To accomplish the reason for this research, quantitative research strategies will be utilized. As expressed over, this research expects to respond to these questions: What is the degree of compliance with the Safety and Health guidelines on Anglo-Gold Ashanti projects? By responding to this inquiry, this research is required to make speculations from the sample being used to more extensive groups past this sample. In this way, it is suitable to utilize a quantitative research strategy for this research (Holton III and Burnett, 2005).

### **3.3 Research Approach**

Research approach is concerned with the stepwise procedures and action plans adopted for a research from one stage (general assumption) up to the interpretation of data (Creswell, 2013). The philosophical stance of the study affects the type of approach adopted for any study (Creswell, 2009). Kwofie (2015) was of the view that the research approach provides an avenue to propose a general view of the research problem while providing answers to the research questions.

In considering the research approach deductive approach was adopted for this study. Taking this into consideration, preference favoured the use of the deductive research approach as it is more appropriate and suiting to the use of pragmatist research philosophy. The deductive research approach is objective in nature, and in exploring the health and safety compliance on mining project, it was imperative to allow for expert views collection through primary data by using structured research questionnaires.

### **3.4 Research Methodology**

Saunders et al (2009, pp. 600) defined research methodology as “the general plan of how the researcher will go about answering the research questions”. On a comparative note, Bryman (2008) termed research procedure as a general direction to the conduct of research. Research strategy, as per Remenyi et al (2003), gives the general course of the study including the procedure by which the study is executed. Saunders et al (2009) referenced that fitting research technique must be chosen dependent on research questions and goals, the degree of existing literature on the branch of knowledge to be inquired about, the measure of time and available resources, and the philosophical underpinnings of the researcher.

The study adopted the quantitative research method. Quantitative research method is a research strategy managing numbers and anything that is quantifiable in an orderly method for

examination of concepts and their connections. It is utilized to respond to inquiries on connections inside quantifiable factors with an aim to clarify, anticipate and control a phenomenon (Leedy 1993). A whole quantitative research more often than not finishes with affirmation or disconfirmation of the theory tried. Researchers utilizing the quantitative strategy recognize one or a couple of factors that they plan to use in their study and continue with information gathering identified with those factors. Quantitative research techniques search to quantify data by applying some form of statistical analysis. Comparing these two research techniques, the quantitative technique was adopted for this study. This was chosen because the method aided the study in measuring the level of compliance with the Health and Safety standards on Anglo-Gold Ashanti projects.

### **3.5 Population of the Study**

A population can be defined as all the units for which information is required (Leedy, 2010). The study will concentrate on the Anglo-Gold Ashanti redevelopment projects launched in 2018. The population for the study will be the senior staff and junior staff working at this project site. The population size for the study involved all the 517 junior and senior staff.

### **3.6 Sampling Technique**

Sampling entails selecting elements of the research populace as a total inclusion of the research isn't normally conceivable. LaDou (2010) states that sampling is the way toward choosing a couple of (a sample) from a greater group (the sampling populace) to turn into the reason for assessing or foreseeing the pervasiveness of obscure piece of data, circumstance or result with respect to the greater group. As indicated by Aina (2009), it includes choosing a fair-minded and agent unit from a populace. LaDou (2010) further expresses that four factors for the most part influence the sample size of a populace. These are the size of the populace, the variety in

the qualities being estimated, the quantity of manners by which information are stratified and the parameters expected of the information.

The study made used of the simple random and stratified sampling techniques. The stratified sampling method was used to select workers based on their ranks at Anglo-Gold Ashanti that is the junior staff and senior staff. The simple random sampling was also used to select the participants after their rank has been known.

### 3.7 Sample Size

While sampling is extremely practical and economical, it must be done accurately else it would present predisposition or mistakes in the outcomes. The sample must be chosen appropriately else it won't represent the entire work (Alreck and Settle, 2011). There are diverse sampling strategies that can be utilized in choosing a sample from a populace. These include simple random sampling, stratified sampling, accidental sampling, quota sampling, cluster sampling and purposive sampling.

Yamane 's formula of 2001 will be used to determine the sample size from population. In the sampling, a standard error of 95% will be considered in this sampling calculation. On a population of 517 respondents, an approximate sample of 224 respondents was attained. 40% of the senior staff and 60% of the junior staff were selected since the junior staff are more exposed to the safety issues in the company.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size, N is the population size and e is the margin of error

$$\frac{517}{1 + 517(0.05)^2} = 224$$

The random sampling technique was adopted for the study to select 224 staff members selected in relation to their ranks of the company. It was made up of 90 senior staff and 134 junior staff of staff selected randomly. The size of 224 was to make the research work relatively easy, since involving all employees was impossible due to the size of the population.

### **3.8 Data Collection Technique**

The research considered a few instruments for data collection and lastly picked structured questionnaire. This was on the grounds that questionnaire tend to cover a more extensive zone inside a brief span. Additionally, it is favored in studies which receive the quantitative research strategy approach. Furthermore, this study isn't a special case.

The questionnaires were circulated to the respondents of the research. These take into consideration staff members of both senior and lower ranks. Two fundamental estimation scales were adapted and utilized in the research. That is ordinal and nominal. In the nominal scale the factors that were influenced included age, sexual orientation, education and profession. In the ordinal scale, a five-point scale was utilized where 5-suggests strongly agree and 1-employs emphatically strongly disagree. The questionnaires were additionally grouped by the goals of the research for effectively validity and distinguishing proof.

### **3.9 Data Analysis Techniques**

Analysis of data is the way toward changing raw data into valuable yield. The study adapted quantitative research design for the investigation (Creswell, 2003; Tailor, 2005). This makes statistical analysis basic in this investigation. Consequently, statistical package for social sciences (SPSS version 20) was adapted to dissect the field information. This will be finished with the guide of Microsoft Excel. The field information was sufficiently approved to evacuate potential oversights, blunders, irregularities, and non-response. Descriptive Statistics were used. To be specific standard deviations, means, relative importance index and frequencies.

The outcomes were introduced utilizing tables and graphs. The discoveries were additionally examined with recently done researches (Sakara, 2000).

### **3.10 Chapter Summary**

This chapter described the methodology that will be applied in carrying out the study. The research design applied was a research survey design. The population was comprised of 224 project sites workers at Anglo-Gold Ashanti. The chapter described in details the research design, approach, methodology, population and sampling design, data collection methods, research procedures and data analysis methods.

The next chapter will discuss the research findings while chapter five will present a summary of the study and make conclusions and recommendations based on the result findings in chapter four.



## CHAPTER FOUR

### ANALYSIS AND DISCUSSION OF RESULTS

#### 4.1 INTRODUCTION

The main aim of the study is to assess compliance with health and safety standards on Anglo-Gold Ashanti Projects. In view of this, data was collected from respondents in relation to the objectives of the study. The collected data was then analysed with the use of descriptive statistics as the statistical tool and the results was presented in this section of the thesis. The chapter basically takes into consideration the analysis of the data and the discussion of the results in relation to the objectives of the study.

#### 4.2 DATA PRESENTATION

With a population of 517 senior and junior staff on the Anglo-Gold Ashanti redevelopment projects launched in 2018, 224 respondents were sampled for the study. With regards to this, 210 respondents successfully completed the questionnaire and return them. This gave 93.8% response rate. The response rate was considered very effective because at least more than 50% of the targeted respondents sampled participated in the study. The research felt that the views expressed in the questionnaire is therefore representative of the target population. Table 4.0 depicts the results on the response rate.

**Table 4.0: Questionnaire return rate**

<b>Respondent category</b>	<b>Number issued out</b>	<b>Number Successfully Completed and Returned</b>	<b>Number Not Successfully Completed</b>	<b>Percentage</b>
Staff	224	210	14	93.8%
<b>Total</b>	<b>224</b>	<b>210</b>	14	<b>93.8%</b>

Source (Field Survey, 2019)

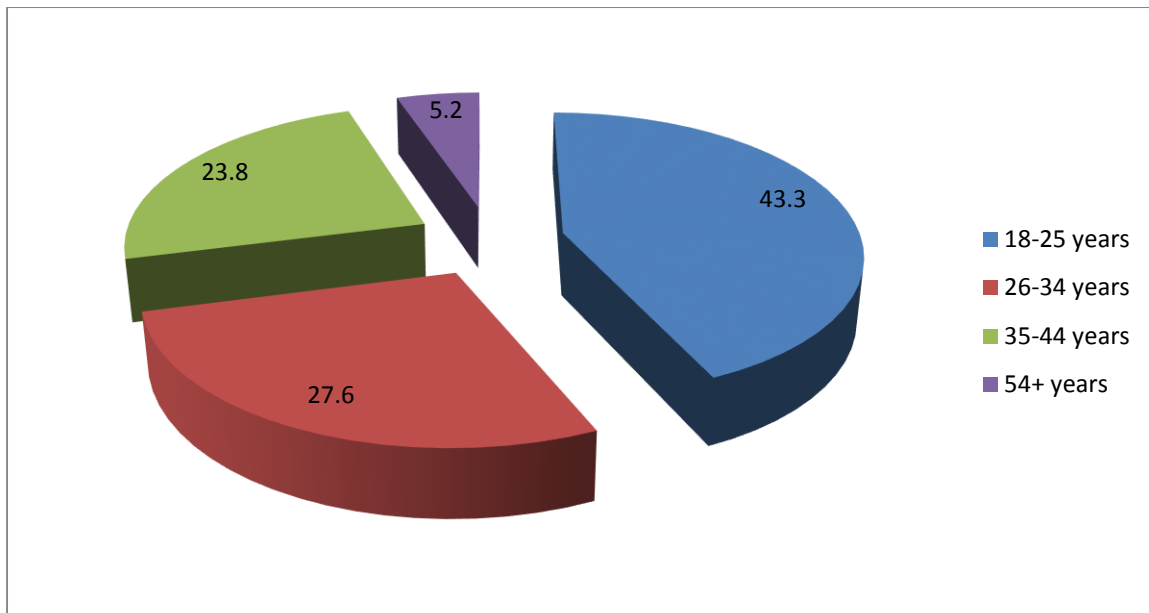
### **4.3 DEMOGRAPHIC DATA**

Demographic data are the basic socio –economic information collected from the respondents. This section of the chapter therefore presents the demographic information of the respondents which takes into consideration the age, marital status, educational level, department, the awareness of health and safety policy in the organization and the adequacy of the health and safety policy. The essence of the demographic data is to describe the composition of the targeted population and how they relate to the study in question.

#### **4.3.1 Age Distribution of Respondents**

Age was one of the demographic data collected from the respondents. Young workers have significantly higher rates of occupational injury than do adult workers. According to recent European data, the incidence of non-fatal injury at work was more than 40 per cent higher among young workers between the ages of 18 and 24 than among adult workers (EU-OSHA, 2007). In view of this, there is the need for collecting data on age from the respondents. Figure 4.1 demonstrates the results of the study in relation to the age distribution of the respondents.

Results from the study discovered that, 43.3% of the respondents were between the age of 18years and 25years, 27.6% were between the ages of 26years and 34years, 23.8% were between the ages of 35years and 44years and 5.2% of the respondents were 54years and above. From the findings, majority of the respondents are younger, which implies that a lot of safety and health education and precautions must be taken in order to keep the workers safe.



**Figure 4.1: Age Distribution of Respondents**

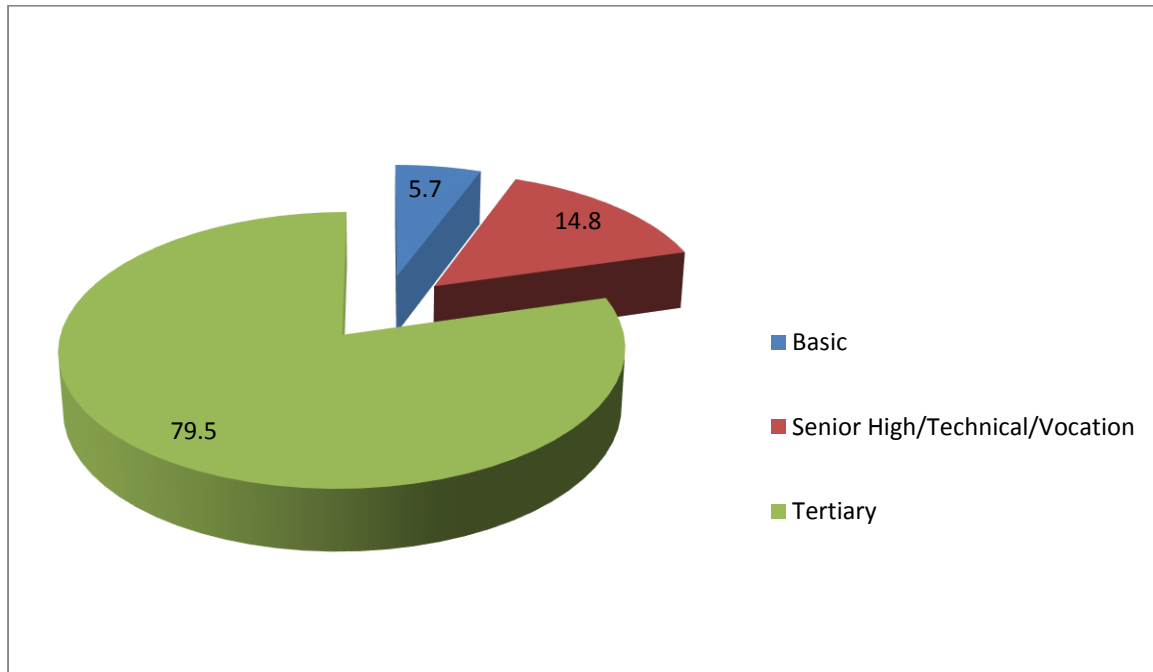
Source (Field Survey, 2019)

#### **4.3.2 Educational Level of Respondents**

The level of education of respondents is one of the critical demographic data sought from the respondents. The level of education of the respondents will determine the attitude towards the measures and their level of knowledge towards safety and hazard control measures which will ensure continual safety and existence of staff and the company. In view of this, data on the level of education of the respondents was collected. Figure 4.2 illustrates further the findings on the level of education of the respondents.

With regards to the findings, 79.5% of the respondents representing the greater number of them had their educational level up to the tertiary, 14.8% of the respondents had their level of education up to the Senior High/Technical/Vocation and 5.7% of the respondents had their level of education up to the Basic level. The implication here is that the level of education is quite higher among the respondents. According to Gharibi, Mortazavi, Jafari, Malakouti and Abadi, (2016), workers with higher level of education, always have positive attitude toward

health and safety precautions at the workplace. With this in mind, it is clear that, staff members of Anglo-Gold portray positive attitude toward health and safety standards at their workplace.



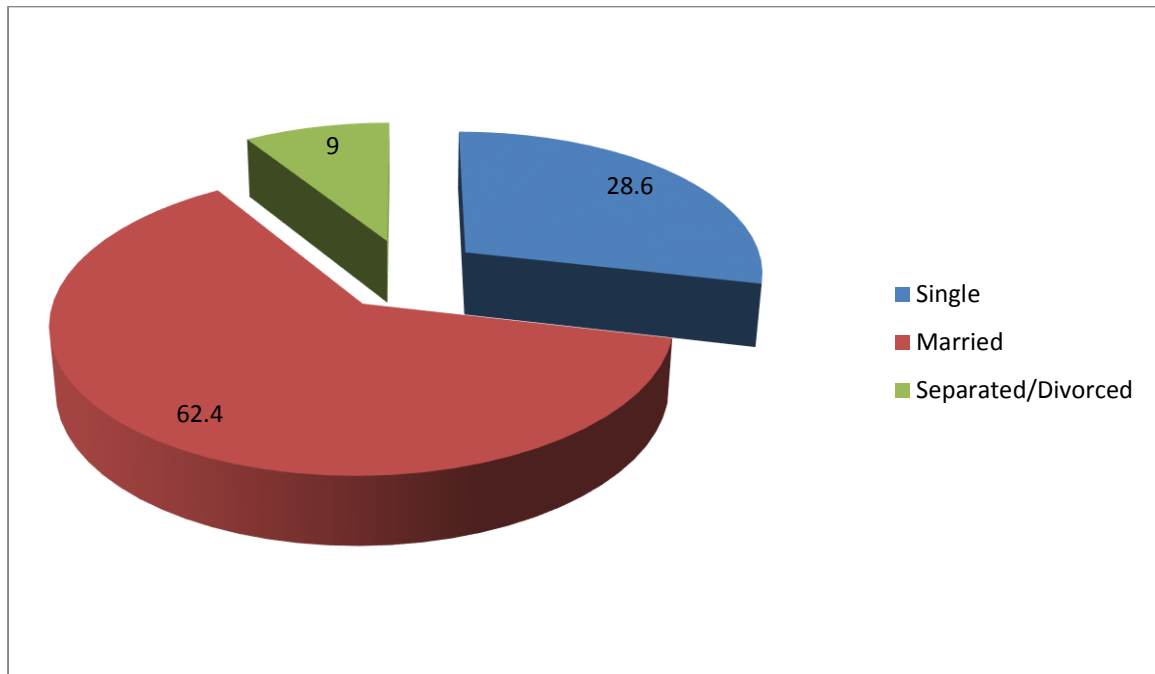
**Figure 4.2: Educational Level of Respondents**

Source (Field Survey, 2019)

#### **4.3.3 Marital Status of Respondents**

Respondents were also asked to provide feedback on their marital status. According to Okuga, Mayega and Bazeyo (2012), greater chances of peril awareness were seen among wedded and single employees contrasted with the individuals who were separated in the research. This could be to the way that the individuals who were separated could be concerned with disconnected issues and probably won't give a consideration in relation to their safety. In view of this, the study tends to determine if this is line with the study. Figure 4.3 demonstrates the findings.

The study revealed that 62.4% representing the greater number of the respondents were married, 28.6% were single and 9% of the respondents were separated or divorced. This implies that, there is higher knowledge and awareness of safety among the respondents.

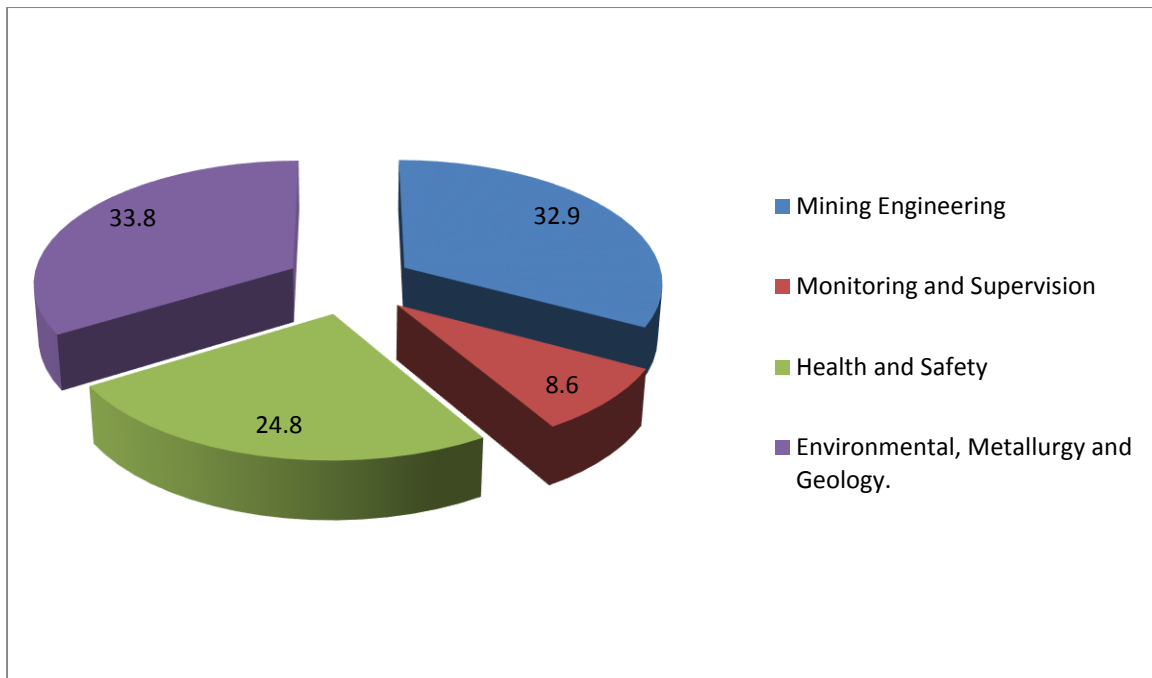


**Figure 4.3: Marital Status of Respondents**

Source (Field Survey, 2019)

#### **4.3.4 Departmental Allocation of Respondents**

With respect to the assigned departments of the participants, 33.8% of the participants were assigned to Environmental, Metallurgy and Geology department of the organization, 32.9% of the respondents were assigned to Mining Engineering department, 24.8% of them were assigned to Health and Safety Department and the rest of the 8.6% were assigned to Monitoring and Supervision department. This distribution of the respondents gives a fair distribution in terms of the kind data needed for the study and thereby will help the study in its achievement of the objectives. This is due to the fact that almost all the respondents are very much related to the safety and health standards of the organization.



**Figure 4.4: Departments Allocation of Respondents**

Source (Field Survey, 2019)

#### **4.3.5 Awareness of Health and Safety Policy by Respondents**

The respondents were further asked whether they are aware of the content of the health and safety policy of the company. This was very necessary because being aware of the content of the policy will serve as a guide in the course of working which will one way or the other lead to safety precautions on the part of the worker. Table 4.1 demonstrates the results of the study on this.

From table 4.1, 92.9% of the respondents asserted that they were aware of the content of the health and safety policy of the company. On the other hand, 3.8% asserted that they were not aware of the content of the health and safety policy of the company and 3.3% were not sure of the policy.

**Table 4.1: Awareness of Health and Safety Policy by Respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	195	92.9	92.9	92.9
No	8	3.8	3.8	96.7
Not Sure	7	3.3	3.3	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### **4.3.6 Perceptions of Respondents on Policy Adequacy**

The respondents' perceptions were sought on the adequacy of the policy. With regards to the findings of the study, the majority of the respondents representing 70.5% asserted that the policy was adequate while 11.9% claimed the policy were not adequate and 17.6% were not sure of the adequacy of the policy. Table 4.2 further demonstrates the findings.

**Table 4.2: Perceptions of Respondents on Policy Adequacy**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	148	70.5	70.5	70.5
No	25	11.9	11.9	82.4
Not Sure	37	17.6	17.6	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### 4.3.7 Existence of Health and Safety Committee

Another demographic data that were collected was on the existence of health and safety committee. Respondents were asked to provide feedback on whether there is a health and safety committee in the company especially on the project under study.

The study showed that 93.3% of the respondents claimed that there was a health and safety committee in their organization especially on the project under study. On the contrary, 2.9% of the respondents claimed that there was no health and safety committee and 3.8% claimed they were not sure of that. Table 4.3 further illustrates the results.

**Table 4.3: Existence of Health and Safety Committee**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	196	93.3	93.3	93.3
No	6	2.9	2.9	96.2
Not Sure	8	3.8	3.8	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

Taking these results into consideration, it is evident that the level of compliance to the health and safety standards in the organization would be higher. This will improve on the conditions of employment of the employees and reduce the number of health and safety issues in the organization.

#### 4.3.8 Functionality of Health and Safety Committee

A follow up question was asked on the health and safety committee. Respondents were asked to provide feedback on whether the health and safety committee in the company especially on the project under study is functional. The study revealed that 50.5% of the respondents claimed that the health and safety committee was functional while 25.2% of the respondents claimed



the health and safety committee were not functional and 24.3% were not really sure of its functionality. In view of these findings, the study can imply that the organization had functional health and safety committee. Table 4.4 demonstrates the findings.

**Table 4.4: Functionality of Health and Safety Committee**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	106	50.5	50.5	50.5
No	53	25.2	25.2	75.7
Not Sure	51	24.3	24.3	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### **4.3.9 Respondents' Understanding of Health and Safety Standards**

Respondents' understanding of the health and safety standards were also sought for in order to determine if they have good knowledge and can be able to apply them in real life situations. From table 4.5, 36.2% of the respondents to their understanding, asserted that health and safety practices are “processes to protect and promote the health, safety and well-being of workers and the sustainability of the workplace”; 30% of them asserted that it is “a state of complete physical, mental and social wellbeing of workers”; 22.4% claimed that it is “A process of protecting all members of the workforce against hazardous substances and prevention of workplace accident”; and the rest of the 11.4% claimed it is “A process of achieving health and well-being of workers and the surrounding community”. Taking this into consideration, majority of the respondents have good knowledge and understanding of the health and safety standards which give a good indication to the study in terms of the data collected.

**Table 4.5: Respondents' Understanding of Health and Safety Standards**

	Frequency	Percent	Valid Percent	Cumulative Percent
A state of complete physical, mental and social wellbeing of workers	63	30.0	30.0	30.0
A process of achieving health and well-being of workers and the surrounding community	24	11.4	11.4	41.4
A process of protecting all members of the workforce against hazardous substances and prevention of workplace accident	47	22.4	22.4	63.8
A process to protect and promote the health, safety and well-being of workers and the sustainability of the workplace	76	36.2	36.2	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

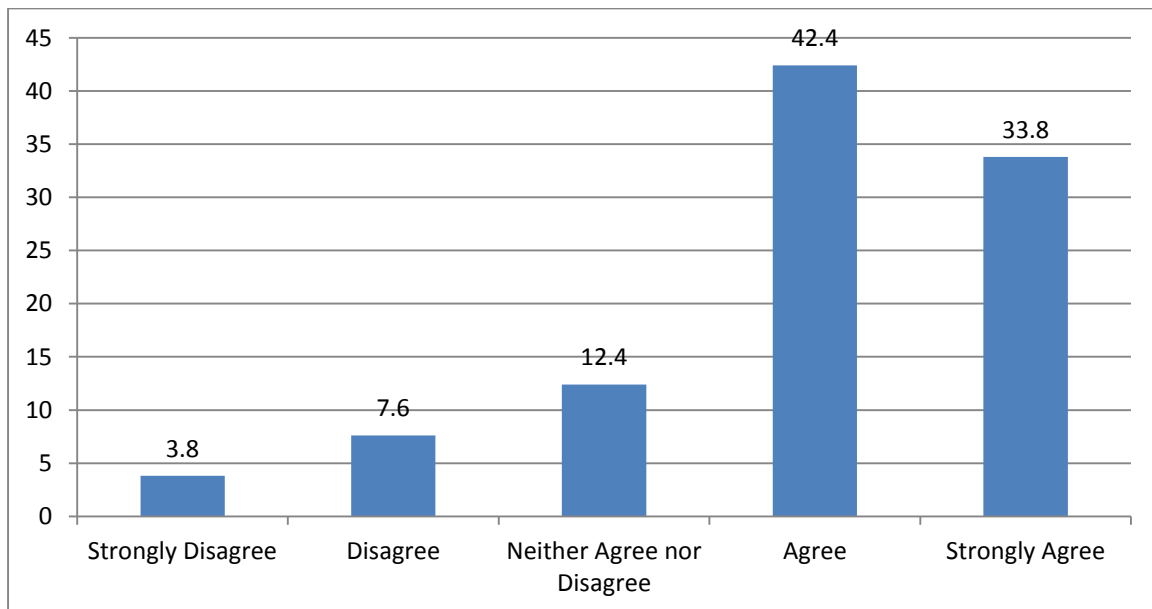
#### **4.4 HEALTH AND SAFETY STANDARDS OF ANGLO – GOLD ASHANTI**

It is in light of a legitimate concern for employees and their delegates to make a living, and furthermore to arrive at maturity in solid and safe conditions (World Health Organization, 2007). These interests are not conflicting but rather correlative to organization interests. Companies have customarily assessed their safety and health as a primary concern (Robin, 2003). The study therefore had an objective to identify the health and safety standards of Anglo-Gold Ashanti. This section therefore represented the findings on the health and safety standards of Anglo-Gold Ashanti.

##### **4.4.1 Provision of Safe Place of Work**

Respondents were asked to provide feedback on whether their organization is responsible for safe place of work for them. The study revealed that, 76.2% representing majority of the

respondents agreed or strongly agreed that their company make sure that their place of work is safe, 12.4% neither agreed nor disagreed and 11.4% disagreed or strongly disagreed. Figure 4.5 illustrates the findings.

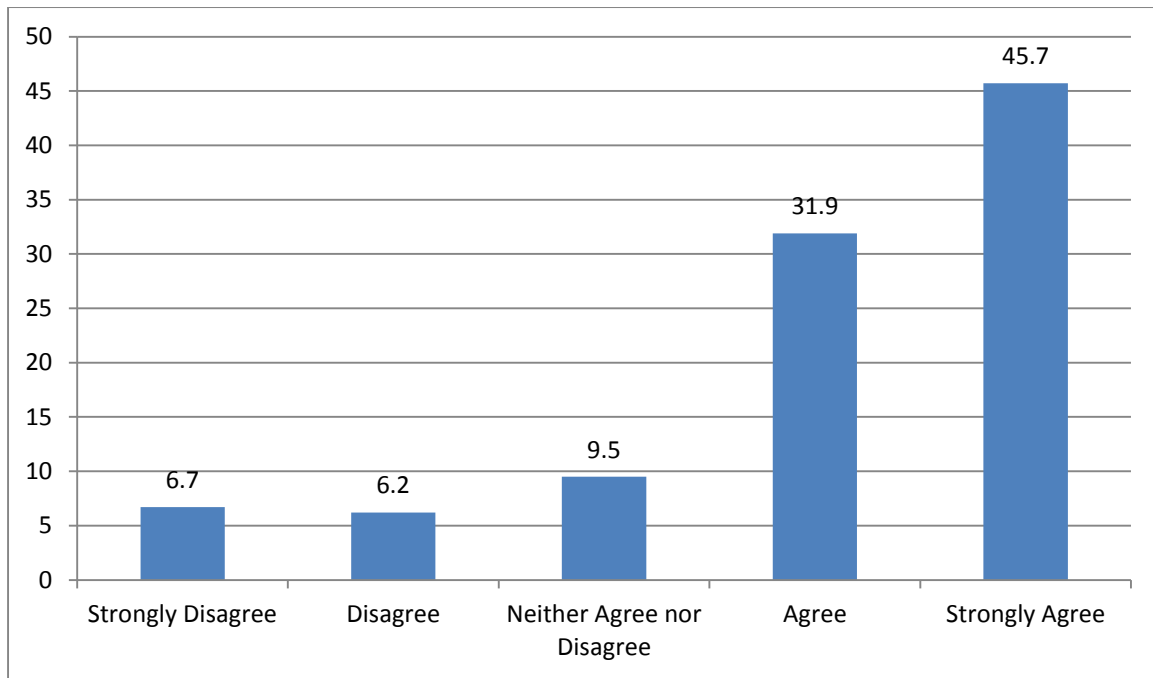


**Figure 4.5: Provision of Safe Place of Work**

Source (Field Survey, 2019)

#### **4.4.2 Provision of Adequate Safety Materials**

With regards to whether respondents' organization makes provision for suitable materials, equipment, and personal protective equipment (PPEs) to empower workers to execute their work safely, 77.6% of the respondents agreed or strongly agreed that their company provided those items to enable them carry out their work safely, 9.5% neither agreed nor disagreed and 12.9% disagreed or strongly disagreed. Figure 4.6 further displays the findings.

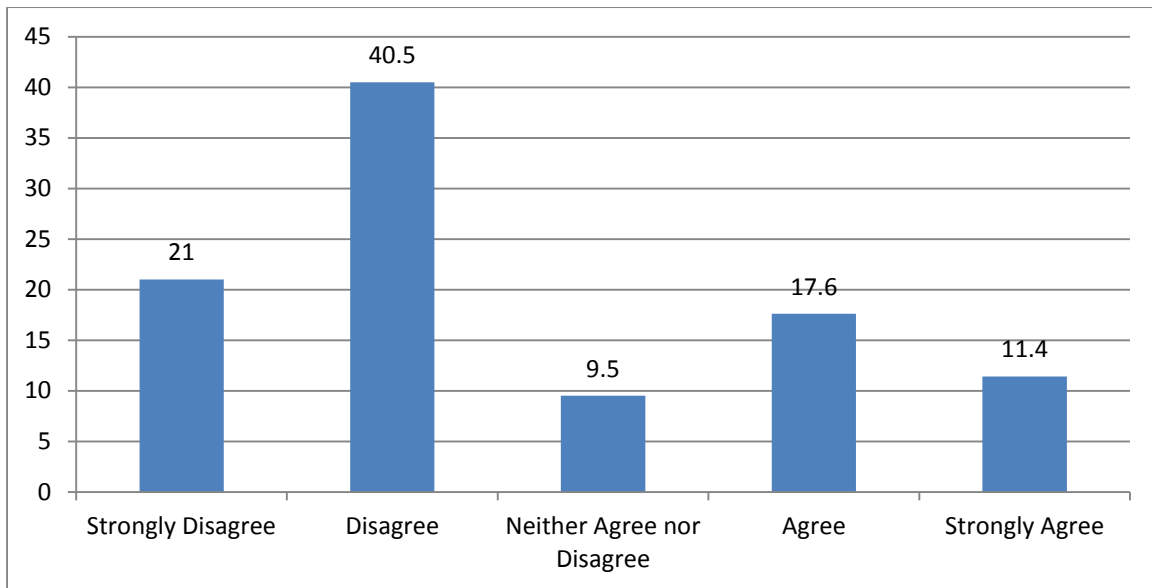


**Figure 4.6: Provision of Adequate Working Gadgets**

Source (Field Survey, 2019)

#### **4.4.3 Regular Usage of Safety Materials at the Workplace**

Respondents were also asked if the safety resources delivered to them by their company are utilized regularly at the workplace. With regards to this, 29% of the respondents agreed or disagreed that they are used at all times at the workplace while the majority of the respondents disagreed or strongly disagreed to that and 9.5% neither agreed nor disagreed. These findings give a very critical indication to the organization because no one can tell when accidents can happen so there always the need to make use of the safety materials. Figure 4.7 illustrates the results.

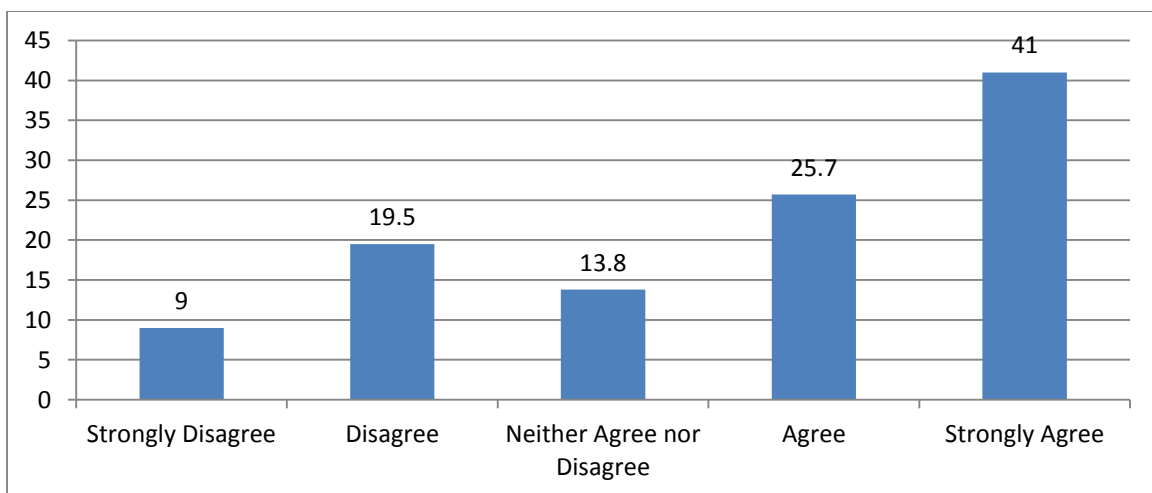


**Figure 4.7: Regular Usage of Safety Materials at the Workplace**

Source (Field Survey, 2019)

#### **4.4.4 Provision of Notices on all Health and Safety Measures**

With regards to if the organization makes provision of notices on all safety and health procedures to the workers, 66.7% of the respondents agreed or strongly agreed that their organization notified them on all health and safety measures, 13.8% neither agreed nor disagreed and 19.5% disagreed or strongly disagreed. Figure 4.8 displays these results.

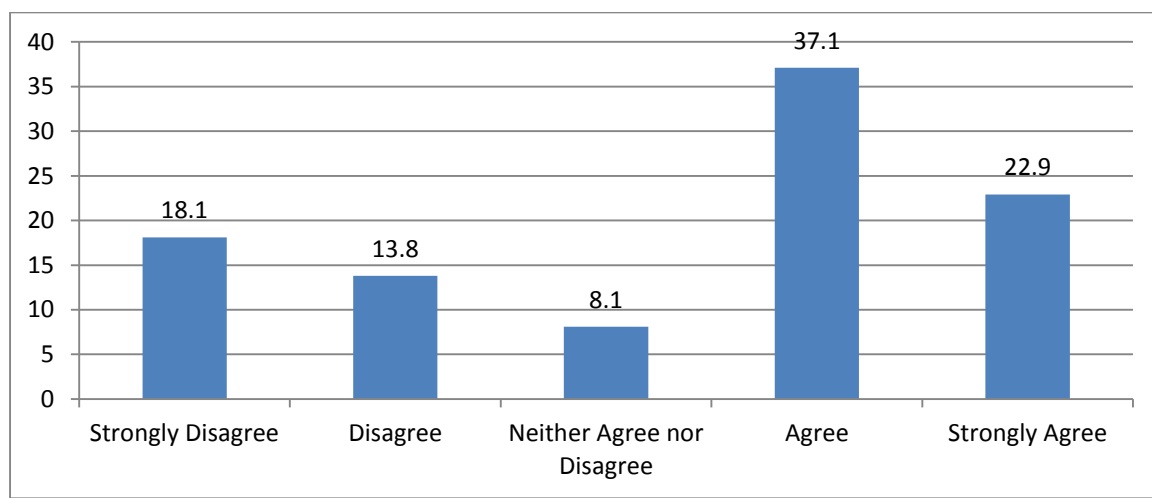


**Figure 4.8: Provision of Notices On All Health And Safety Measures.**

Source (Field Survey, 2019)

#### 4.4.5 Organization of Safety Induction, Orientation and Refresher Courses

60% of respondents agreed or strongly agreed that orientation, safety training, and refresher courses are organized by their company at the workplace, 8.1% of the respondents neither agreed nor disagreed and 31.9% of the respondents disagreed or strongly disagreed that orientation, safety training, and refresher courses are organized by their company at the workplace. The results are displayed in figure 4.9.

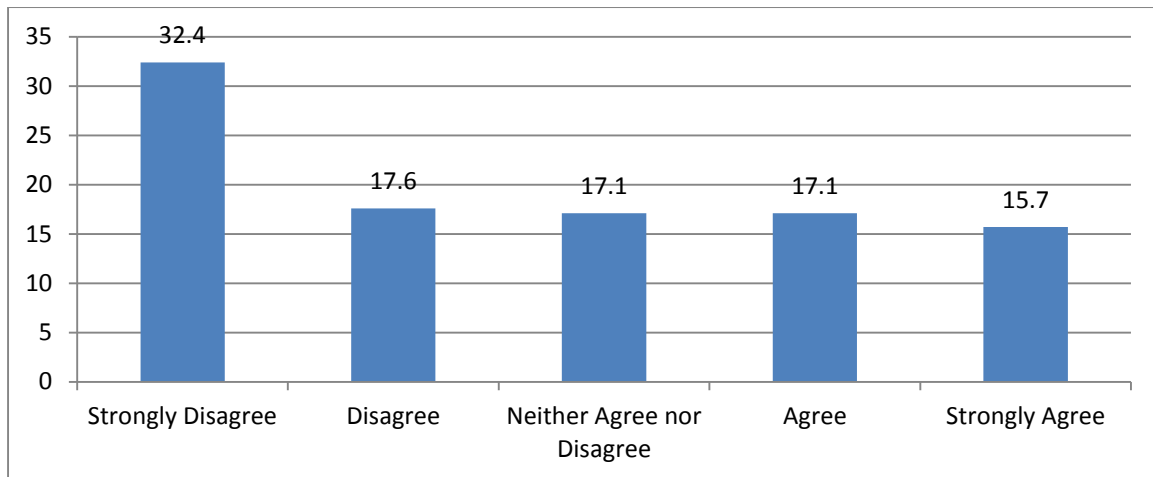


**Figure 4.9: Organization of Safety Induction, Orientation and Refresher Courses**

Source (Field Survey, 2019)

#### 4.4.6 Organization of Fire Drills

Only 32.8% of the respondents agreed or strongly agreed that fire drills are conducted periodically at the workplace to check for emergency responses and preparedness of the workers and systems while on the contrary them majority of the respondents representing 50% disagreed or strongly disagreed and 17.1% neither agreed nor disagreed. Figure 4.10 displays the findings.

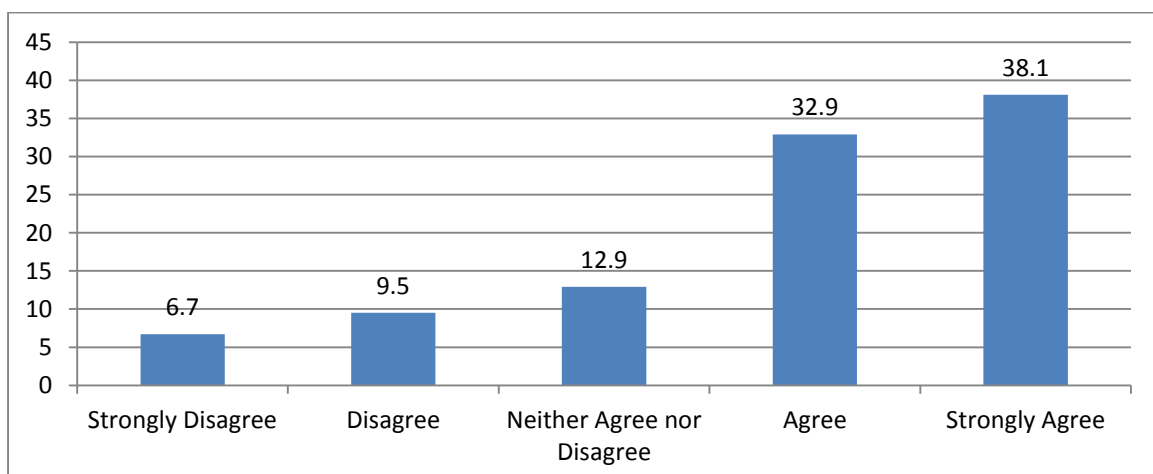


**Figure 4.10: Organization of Fire Drills**

Source (Field Survey, 2019)

#### **4.4.7 Safety Assurance by Co – Workers**

Respondents also gave feedback on whether their fellow employees in their company make sure that their colleagues are safe. 71% of the respondents agreed or strongly agreed that their fellow workers ensure their safety, 12.9% neither agreed nor disagreed and 16.2% disagreed or strongly disagreed that their fellow employees ensure their safety. Figure 4.11 gives demonstration of the findings.



**Figure 4.11: Safety Assurance by Co – Workers**

Source (Field Survey, 2019)

#### **4.5 LEVEL OF COMPLIANCE WITH THE HEALTH AND SAFETY STANDARDS ON ANGLO-GOLD ASHANTI PROJECTS**

Behavior in relation safety is the key in decreasing the wounds at the working environment and indirectly affecting the results of the occasion before the wounds or mishaps happened (Johnson, 2003). Partner and Esau (2010) expressed that compliance is viewed as the act of dwelling with relevant principles and guidelines. With regards to this, the level of compliance with the health and safety standards on Anglo-Gold Ashanti projects were assessed. This section of the chapter presents the findings on the level of compliance with the health and safety standards on Anglo-Gold Ashanti projects.

##### **4.5.1 Safeguarding of Employees from Unreasonable Risks**

Respondents were asked to provide feedback on whether their organization ensures that they are not exposed to any irrational dangers in the workplace. The study revealed that 63.3% of the respondents agreed or strongly agreed that their organization ensures that they are not subjected to any unreasonable risks in the course of working; 12.4% neither agreed nor disagreed and 24.3% of the respondents disagreed or strongly disagreed. Table 4.6 displays the findings from the study.

**Table 4.6: Safeguarding of employees from Unreasonable Risks**

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	23	11.0	11.0	11.0
Disagree	28	13.3	13.3	24.3
Neither Agree nor Disagree	26	12.4	12.4	36.7
Agree	99	47.1	47.1	83.8
Strongly Agree	34	16.2	16.2	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)



#### 4.5.2 Encouraging of Workers in Recording of Near Misses

The study further revealed that 36.2% of the respondents agreed or strongly agreed that their organization motivates employees to put down near misses at work place while 39% of the respondents disagreed or strongly disagreed and 24.8% neither agreed nor disagreed. Table 4.7 illustrates the results from the study.

**Table 4.7: Encouraging Of Workers To Record Near Misses At Work Place**

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	9	4.3	4.3	4.3
Disagree	73	34.8	34.8	39.0
Neither Agree nor Disagree	52	24.8	24.8	63.8
Agree	55	26.2	26.2	90.0
Strongly Agree	21	10.0	10.0	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### 4.5.3 Organization of Periodic Reviews on Health and Safety Standards

According to the results collected from the respondents, 69.5% of them agreed or strongly agreed that their organization organizes periodic audits to evaluate health and safety ethics in the work place, 24.8% neither agreed nor disagreed and 5.7% disagreed to the statement. The results are displayed in Table 4.8.

**Table 4.8: Organization of Periodic Reviews on Health and Safety Standards**

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	12	5.7	5.7	5.7
Neither Agree nor Disagree	52	24.8	24.8	30.5
Agree	43	20.5	20.5	51.0
Strongly Agree	103	49.0	49.0	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### 4.5.4 Quick Response to Safety Concerns

With respect to whether the management of the organization responds quickly to safety concern, 32.3% of the respondents agreed or strongly agreed while 38.6% of the respondents disagreed or strongly disagreed and 29% of them neither agreed nor disagreed. Table 4.9 demonstrates the findings.

**Table 4.9: Quick Response to Safety Concerns**

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	44	21.0	21.0	21.0
Disagree	37	17.6	17.6	38.6
Neither Agree nor Disagree	61	29.0	29.0	67.6
Agree	28	13.3	13.3	81.0
Strongly Agree	40	19.0	19.0	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### 4.5.5 Joint Inspections of Workplace

Respondents were asked to also provide feedback on whether inspections at the workplace in relation to health and safety are conducted by both the trained management and representatives from the employees. The study showed that majority of the respondents as shown in table 4.10 as 51.4% agreed or strongly agreed to the statement while 31.9% disagreed or strongly disagreed and 16.7% neither agreed nor disagreed. The results can be seen in table 4.10.

**Table 4.10: Joint Inspections of Workplace**

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	11	5.2	5.2	5.2
Disagree	56	26.7	26.7	31.9
Neither Agree nor Disagree	35	16.7	16.7	48.6
Agree	54	25.7	25.7	74.3
Strongly Agree	54	25.7	25.7	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### 4.5.6 Training of Personnel for Incident Investigations

45.7% of the respondents agreed or strongly agreed that their organization has persons trained for incident investigation procedure while 45.7% disagreed or strongly disagreed and 17.6% of the respondents neither agreed nor disagreed. The results are displayed by Table 4.11.

**Table 4.11: Training of Personnel for Incident Investigations**

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	59	28.1	28.1	28.1
Disagree	37	17.6	17.6	45.7
Neither Agree nor Disagree	18	8.6	8.6	54.3
Agree	68	32.4	32.4	86.7
Strongly Agree	28	13.3	13.3	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### **4.5.7 Effective Incident Reporting Procedure Known by Employees**

With respect to whether the department assigned to the respondents has a good occurrence reporting process that is known by employees, 81.9% of the respondents agreed or strongly to the statement, 7.1% of them neither agreed nor disagreed and 11% disagreed. Table 4.12 demonstrates the findings on this.

**Table 4.12: Effective Incident Reporting Procedure Known by Employees**

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	23	11.0	11.0	11.0
Neither Agree nor Disagree	15	7.1	7.1	18.1
Agree	73	34.8	34.8	52.9
Strongly Agree	99	47.1	47.1	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### **4.5.8 Provision of Appropriate Remedy for Accidents**

Respondents also gave their responses on management making provisions of proper solutions for taking care of accidents happening in their departments. With regards to this, 48.1% of the respondents agreed or strongly agreed that management provides appropriate remedy for addressing accidents occurrence in their department. On the other hand, 38.1% of the respondents disagreed or strongly disagreed to that and 13.8% neither agreed nor disagreed to that. Table 4.13 depicts the findings of these responses

**Table 4.13: Provision of Appropriate Remedy for Accidents**

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	30	14.3	14.3	14.3
Disagree	50	23.8	23.8	38.1
Neither Agree nor Disagree	29	13.8	13.8	51.9
Agree	65	31.0	31.0	82.9
Strongly Agree	36	17.1	17.1	100.0
Total	210	100.0	100.0	

Source (Field Survey, 2019)

#### **4.6 MEASURES TO IMPROVE THE LEVEL OF COMPLIANCE WITH HEALTH AND SAFETY STANDARDS ON ANGLO-GOLD ASHANTI PROJECT**

The costs of unsafe, stressful and unhealthy workplaces are horrific in personal, economic, and social terms and therefore require immediate attention. Therefore, there is the need for measures to be taken in order to improve the level of compliance with health and safety standards on Anglo-Gold Ashanti Project. Based on the situations on the ground, the respondents suggested measures that can be adopted to enhance the compliance level with health and safety standards on Anglo-Gold Ashanti Project. This section therefore depicts the findings of from the study.

Table 4.14 shows descriptive statistics that disclose the degree to which these factors were viewed as measures. In this table, factors highly viewed as measures have mean scores closer to 5, which is the highest value on the measurement scale. Factors lowly viewed as measures have low mean scores which are close to 1, the lowest value on the measurement scale.

On the basis of these criteria, the variables that were lowly perceived as measures included: “Providing protective equipment but only if changes to the design, process or specification cannot completely remove the hazard” has the smallest mean score ( $M = 3.51$ ,  $SD=1.138$ ), “Isolating hazardous processes and substances so that workers do not come into contact with them” ( $M = 3.34$ ,  $SD = 1.354$ ) and “Good housekeeping to keep premises and machinery clean and free from toxic substances” ( $M = 3.51$ ,  $SD = 1.203$ ) also have small mean scores. Therefore, these three variables, based on the perceptions of the employees, do not represent strong measures to improve the level of compliance with health and safety standards on Anglo-Gold Ashanti Project.

The other variables however have large mean scores, suggesting that they were highly perceived as measures to improve the level of compliance with health and safety standards on Anglo-Gold Ashanti Project. These included: “Changing the processes or substances used, to promote better protection or eliminate the risk” ( $M = 3.84$ ,  $SD = 1.335$ ), “Training workers to avoid risk” ( $M = 4.13$ ,  $SD = 1.097$ ); “Pre-employment medical examinations and regular checks on those exposed to risk” ( $M = 4.15$ ,  $SD = 0.883$ ) and “Dominating the hazard at source through design and process engineering” ( $M = 4.41$ ,  $SD = 0.754$ ).

**Table 4.14: Measures to Improve the Level of Compliance with Health and Safety****Standards on Anglo-Gold Ashanti Project**

<b>Measures</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Rank</b>
Dominating the hazard at source through design and process engineering	4.41	.754	1 <sup>st</sup>
Isolating hazardous processes and substances so that workers do not come into contact with them	3.34	1.354	9 <sup>th</sup>
Changing the processes or substances used, to promote better protection or eliminate the risk	3.84	1.335	6 <sup>th</sup>
Providing protective equipment but only if changes to the design, process or specification cannot completely remove the hazard.	2.51	1.138	10 <sup>th</sup>
Training workers to avoid risk	4.13	1.097	4 <sup>th</sup>
Good housekeeping to keep premises and machinery clean and free from toxic substances.	3.51	1.203	7 <sup>th</sup>
Pre-employment medical examinations and regular checks on those exposed to risk	4.15	.883	3 <sup>rd</sup>
Ensuring that ergonomic considerations (thus, those concerning the design and use of equipment, machines, processes and workstations) are taken into account in design specifications, establishing work routines and training	4.03	1.058	5 <sup>th</sup>
Maintaining and preventing medicine programmes which develop health standards for each job and involve regular audits of potential health hazards and regular examinations for anyone at risk	4.26	.877	2 <sup>nd</sup>
Maintaining plant and equipment to eliminate the possibility of harmful emissions, controlling the use of toxic substances and eliminating radiation hazards	3.39	1.622	8 <sup>th</sup>

Source (Field Survey, 2019)

The study adopted 10 major measures from Turner and Lawrence (1965) cited in Cudjoe, (2011) in improving the level of compliance with health and safety standards on Anglo-Gold Ashanti Project. With this in mind, the respondents provided their feedback on these measures they perceived as very critical in improving the level of compliance with health and safety standards on Anglo-Gold Ashanti Project. From table 4.14, controlling the threat at cause

through process and design engineering were perceived as a major measure that needed to be adopted to improve the level of compliance. This was followed by keeping up and anticipating medication programs which create standards on health for each activity and include customary reviews of potential health perils and normal assessments for anybody in danger; pre-employment medical examinations and regular checks on those exposed to risk; training workers to avoid risk; guaranteeing that ergonomic contemplations (along these lines, those concerning the structure and utilization of hardware, machines, procedures and workstations) are considered in plan details, building up work schedules and preparing and changing the procedures or substances utilized, to enhance better security or dispose of the hazard respectively. These findings are in tandem with the study of Turner and Lawrence (1965) cited in Cudjoe, (2011).

Those practices that were not perceived as major measure that can aid in improving the level of compliance to the health and safety standards at Anglo – Gold Ashanti were maintain the equipment's and premises from dirt and toxic substances through good housekeeping; maintaining plant and equipment to eliminate the possibility of harmful emissions, controlling the use of toxic substances and eliminating radiation hazards; isolating hazardous processes and substances so that workers do not come into contact with them and provision of protective equipment but only if changes to the design, process or specification cannot completely remove the hazard respectively.



## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION**

The main aim of the study is to assess compliance with health and safety standards on Anglo-Gold Ashanti Projects. In order to achieve this aim, research questions and objectives were formulated along with strategies and methods were adopted for the collection of data from targeted respondents. In view of this, analysis and discussion on the findings were also made in order to be able to make effective conclusions and recommendations in light of the objectives and findings from the study. This chapter therefore considers the conclusions and recommendations including the one for future study in relation to health and safety standards.

#### **5.2 SUMMARY OF FINDINGS**

The study basically was to identify the Health and Safety Standards of Anglo – Gold Ashanti, determine the level of compliance with the Health and Safety standards on Anglo-Gold Ashanti projects and identify measures to enhance the compliance level of Health and safety standards on Anglo-Gold Ashanti projects. In view of this, the study made use of a research survey design with a deductive approach and quantitative strategy since the study was assessing the compliance level of safety and health standards. With a population of 517 junior and senior staff, 224 were sampled for the study with the use of simple random and stratified sampling technique.

With regards to the findings, 79.5% of the respondents representing the greater number of them had their educational level up to the tertiary which gave the impression that staff members of Anglo-Gold portray positive attitude toward health and safety standards at their workplace. Also 92.9% of the respondents asserted that they were aware of the content of the health and safety policy of the company. The study also showed that 93.3% of the respondents claimed

that there was a health and safety committee in their organization especially on the project under study of which it is quite functional.

With respect to the health and safety standards at Anglo-gold Ashanti, the study revealed that provision of safe workplace, provision of adequate equipment, materials and personal protective equipment (PPEs) to enable employees to carry out their work safely, provision of notices on all health and safety measures to the workers, organization of safety induction, orientation and refresher courses by my organization at the workplace, safety assurance by fellow workers were the common standards found at Anglo-gold Ashanti.

The study further discovered that the level of compliance was moderate due to compliance to the following standards: the company ensures that they are not exposed to any irrational dangers in the working environment; the company conducts occasional audits to evaluate safety and health norms in the work place, whether inspections at the workplace in relation to health and safety are conducted by both the trained management and representatives from the employees and there is a successful occurrence reporting methodology that is known by workers. The study also discovered that provisions of applicable solution for taking care of accidents that happens in their departments, trained personnel for incident investigation procedure, quick response for safety concerns and encouraging of employees to write down near misses at work place were the standards with quite a low level of compliance.

The study moreover revealed that dominating the hazard at source through design and process engineering were perceived as a major measure that needed to be adopted to improve the level of compliance; keeping up and forestalling medicine projects which create health principles for each activity and include customary reviews of potential health perils and normal assessments for anybody in danger; pre-business therapeutic assessments and consistent checks on those exposed to perils; employee training to maintain a strategic distance from hazard; guaranteeing

that ergonomic contemplations (accordingly, those concerning the plan and utilization of gear, machines, procedures and workstations) are considered in design details, building up work schedules and preparing and changing the procedures or substances utilized, to enhance better security or wipe out the hazard were the practices seen as significant measures to improve the degree of compliance to safety and health benchmarks on the Anglo-gold Ashanti projects

### **5.3 RECOMMENDATIONS**

The following are the recommendations put across based on the findings of the study. These recommendations are made in relation to the objectives of the study.

#### **5.3.1 Health and Safety Standards of Anglo – Gold Ashanti**

With the findings of the study in mind, it is recommended that education should be done on the regular usage of the safety materials at the workplace. It is very important for more light to be thrown on the usage of safety materials due to the fact that, the usage would prevent many and major accidents at the workplace. It is also a recommendation of the study that there should regular training of firefighting skills or drills at the workplace which will help in responding to any emergency issues that may occur and also check the preparedness of the employees and systems.

#### **5.3.2 Level of Compliance with the Health and Safety Standards on Anglo-Gold Ashanti Projects**

The existence of Health and Safety standards without compliance at the workplace would not prevent the happenings of accidents which will also affect the productivity of the organization. It is therefore necessary for every organization to measure periodically the level of compliance of all employees at the workplace. It therefore recommended by the study that employees must be motivated by their institutions to put down all the near misses at work, attends to safety issues as quickly as possible, some of the workers need to be trained to help conduct any

investigation procedures and provide any effective solutions in order to take care of the injuries or accidents that may occur in the workers' departments.

### **5.3.3 Measures to Improve the Level of Compliance with Health and Safety Standards on Anglo-Gold Ashanti Project**

Whenever organizations are able to measure the level of compliance with health and safety standards at the workplace, opportunities are created in such a way that there will be some measures to be put in place to improve the level of compliance. A member of the health and safety committee of every organization should be trained on how to measure the level of compliance regularly for example quarterly. When this is done, the level of compliance with health and safety standards in the organization will be high which will also improve the productivity and efficiency of the organization.

### **5.3.4 Regular Visits to Sites by Safety and Health Officers**

The appointment of health and safety officers is to make sure that regular reviews and checkups on project sites must be conducted. Therefore, it is recommended for the health and safety officers to provide guidelines consistently to all staff members on project sites in order to make sure that the level of compliance is at an optimum level. This will also ensure the safety and wellbeing of all staff members on sites and beyond.

## **5.4 RECOMMENDATION FOR FURTHER RESEARCH**

Safety and health of every employee is very critical to every organization. In view of this, the study suggests that, a further study should be conducted on how the compliance level to safety and health affects the productivity, performance and efficiency of an organization. This will also give a broad knowledge on the significance of health and safety in organization.

## **5.5 CONCLUSION**

It has severally been reported that incorporating occupational health and safety standards into a project enhances its chances of success. In effect, eliminating the various risks that are associated with non-inclusion of OHS measures proves to be more beneficial, especially when such steps are taken from the very commencement phase of the project. The study concludes that safety and health is very critical to the performance of every employee as well as the organization. The study further concludes that the compliance level to safety and health standards on the projects at Anglo-gold Ashanti needs to be improved in order to increase the performance of the employees.

The study also concludes that measures should be put in place to improve the level of compliance on the projects at Anglo-Gold Ashanti. Measures such as dominating the hazard at source through design and process engineering; keeping up and forestalling medicine projects which create health principles for each activity and include customary reviews of potential health perils and normal assessments for anybody in danger; pre-business therapeutic assessments and consistent checks on those exposed to perils and employee training to maintain a strategic distance from hazard are very critical measures needed to be taken into consideration.

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## **APPENDIX**

### **QUESTIONNAIRE**

My name is Moro Musah, a student of Kwame Nkrumah University of Science and Technology (KNUST) pursuing MSC Project Management. I am conducting a research on the topic “HEALTH AND SAFETY COMPLIANCE ON ANGLOGOLD ASHANTI PROJECTS” leading to Master’s Degree.

This questionnaire is meant to solicit information for the purpose of the research. All information gathered is purposely for the research and will be treated with strict confidentiality. Kindly answer the following questions by either ticking the appropriate answer or just stating your opinion.

#### **SECTION I – DEMOGRAPHIC DATA**

1. Age:

18-25 [ ]      26-34 [ ]      35-44 [ ]      54+ [ ]

2. Educational level

Basic/SHS [ ]      Senior High/Technical/Vocation [ ]      Tertiary [ ]

Others specify.....

3. Marital status:      Single [ ]      Married [ ]      Separated/Divorced [ ]

4. Department .....

5. Have you heard of the health and safety policy?    Yes [ ]      No [ ]

6. Are you aware of the content of the health and safety policy of the company?

a) Yes [ ] b) No [ ]

7. Do you think the policy is adequate?

Yes [ ]      No [ ]      Not Sure [ ]

8. Is there a health and safety committee in the establishment?

Yes [ ]      No [ ]      Not Sure [ ]

9. Is the health and safety Committee functional in the establishment?

Yes [ ]      No [ ]      Not Sure [ ]

## **SECTION II –HEALTH AND SAFETY STANDARDS OF ANGLO – GOLD ASHANTI**

10. Please tick from the options below to indicate your understanding on Health and Safety practices in AngloGold Ashanti, Obuasi mines.

- i. A state of complete physical, mental and social wellbeing of workers [ ]
- ii. A process of achieving health and well-being of workers and the surrounding community [ ]
- iii. A process of protecting all members of the workforce against hazardous substances and prevention of workplace accident [ ]
- iv. A process to protect and promote the health, safety and well-being of workers and the sustainability of the workplace [ ]
- v. Others (please specify).....

Indicate your level of Agreement on the following statements by ticking the appropriate number using the key given below: 1 = strongly agree 2= Agree 3=Neutral 4 = Disagree 5= strongly Disagree

<b>HEALTH AND SAFETY STANDARDS OF ANGLO – GOLD ASHANTI</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. My company provides safe place of work.					
2. My company provides adequate equipment, materials and personal protective equipment (PPEs) to enable employees to carry out their work safely.					
3. Safety materials provided by my organization are used all the time at the workplace.					
4. My company provides notices on all health and safety measures.					
5. Safety induction, orientation and refresher courses are conducted by my organization at the workplace.					
6. Fire drills are conducted periodically at the workplace to check for emergency responses and preparedness of the workers and systems.					
7. Co-workers in my organisation ensure the safety of fellow workers.					

### SECTION III – LEVEL OF COMPLIANCE WITH THE HEALTH AND SAFETY STANDARDS ON ANGLO-GOLD ASHANTI PROJECTS

Indicate your level of Agreement on the following statements by ticking the appropriate number using the key given below: 1 = strongly agree 2= Agree 3=Neutral 4 = Disagree 5= strongly Disagree

LEVEL OF COMPLIANCE WITH THE HEALTH AND SAFETY STANDARDS ON ANGLO-GOLD ASHANTI PROJECTS	1	2	3	4	5
1. My company ensures that employees are not subjected to any unreasonable risks in the workplace.					
2. My company encourages workers to record near misses at work place.					
3. My company conducts periodic reviews to assess health and safety standards in the work place.					
4. Management responds quickly to safety concern					
5. Workplace inspections are conducted jointly by trained management and employee representatives.					
6. My company has persons trained for incident investigation procedure.					
7. My department has an effective incident reporting procedure that is known by employees.					
8. Management provides appropriate remedy for addressing accidents occurrence in my department.					



## SECTION IV – MEASURES TO IMPROVE THE LEVEL OF COMPLIANCE WITH HEALTH AND SAFETY STANDARDS ON ANGLO-GOLD ASHANTI PROJECT

Indicate your level of Agreement on the following statements by ticking the appropriate number using the key given below: 1 = strongly agree 2= Agree 3=Neutral 4 = Disagree 5= strongly Disagree

<b>MEASURES TO IMPROVE THE LEVEL OF COMPLIANCE WITH HEALTH AND SAFETY STANDARDS ON ANGLO- GOLD ASHANTI PROJECT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Dominating the hazard at source through design and process engineering					
2. Isolating hazardous processes and substances so that workers do not come into contact with them					
3. Changing the processes or substances used, to promote better protection or eliminate the risk					
4. Providing protective equipment but only if changes to the design, process or specification cannot completely remove the hazard.					
5. Training workers to avoid risk					
6. Good housekeeping to keep premises and machinery clean and free from toxic substances.					
7. Pre-employment medical examinations and regular checks on those exposed to risk					
8. Ensuring that ergonomic considerations (thus, those concerning the design and use of equipment, machines, processes and workstations) are taken into account in design specifications, establishing work routines and training					

9. Maintaining and preventing medicine programmes which develop health standards for each job and involve regular audits of potential health hazards and regular examinations for anyone at risk					
10. Maintaining plant and equipment to eliminate the possibility of harmful emissions, controlling the use of toxic substances and eliminating radiation hazards					