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Faculty of Forestry and Wood Sciences

Department of Forest Technologies and Constructions



Work Safety Among Forestry Workers in Ghana

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Supervisor

Ing. Jan Macku, Ph.D.

Author

Eric Obiri Yeboah

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Dipl.-Kfm./Univ. Eric Yeboah Obiri

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Thesis title

Work Safety Among Forestry Workers in Ghana

Objectives of thesis

The main aim of the thesis is to describe the current state of forestry in Ghana with a focus on occupational safety.

Another aim of the thesis is to describe a subjective view of the future development of the problem and to suggest possible steps that could bring positive results.

Methodology

The thesis will be based on literary research.

Based on a summary of the available literary sources, a subjective assessment will be made subsequently.

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- Hawthorne, W.D.; Jongkind, C.C.H.: Woody plants of Western African forests, A guide to the forest trees, shrubs and lianes from Senegal to Ghana Richmond, Surrey UK : Royal Botanic Gardens, Kew – ISBN 1842460897 – 1023, 2006
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- Wagner, M.R., and Cobbinah, J.R. Deforestation and sustainability in Ghana. United States: N. p., 1993. Web.

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The Bachelor Thesis Supervisor

Ing. Jan Macků, Ph.D.

Supervising department

Department of Forest Technologies and Constructions

Electronic approval: 7. 9. 2018

doc. Ing. Miroslav Hájek, Ph.D.

Head of department

Electronic approval: 9. 2. 2019

prof. Ing. Marek Turčáni, Ph.D.

Dean

Prague on 09. 04. 2020

Declaration

I hereby declare that I have done this thesis entitled “*Work Safety Amongst Forestry Workers in Ghana*” independently, all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references.

In Prague dated
20th April 2020

.....
Eric Obiri Yeboah

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Abstract

Safety at workplaces is an essential concern for all employees, employers and society as well. Safety is of critical concern because workplace injuries and accidents have many complications on the life of the individual worker as well as others in the community. Foresters are like all other workers require safe working environments. However, the work performed by foresters are considered among occupations with high risks of work-related injuries. This work reviewed factors affecting injury among forestry workers in Ghana and looks at scientific literature available worldwide on the topic. It also looked at the working conditions of foresters in the developed countries as compared to that of developing countries. A survey of forester's health and safety has since being conducted for forest workers in Ghana. The survey was necessitated from the shortage of statistics on this topic, even though accidents and health breaches occurrence in Ghanaian forestry work. A questionnaire that inquired about safety, working conditions and the use of personal protective equipment (PPE) showed 24% of the respondents experienced accidents during work. Many of these accidents consisted of cuts by chainsaws or axes. Another revelation from these administered questionnaires was the fact that most of the respondents, although they were aware of the relevance of PPE use, did not wear any appropriate PPEs. Eighty per cent (80%) of the respondents admitted that they use partial protective equipment. All categories of respondents indicated that they had had the use of PPEs recommended for them.

Keywords: Forestry, accidents, injuries, safety, chainsaws, personal protective equipment.

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1. Introduction

A sound and motivated workforce are basic to the social and monetary prosperity of any business, and all things considered; it is critical to prevent occupational risks to protect workers. Each job has some type of dangers or perils. Forestry workers on the other hand have numerous risks for which most people don't know at their work environment which expands their risk of danger from harmful to non-dangerous conditions, bacterial, viral, physical and chemical injuries. Workers in the casual economy are considerably more likely than formal workers to be presented to poor working conditions, low security, health, natural dangers, and to endure unforeseen accidents or injuries. Additionally, the greater part of the casual workers has practically zero information on the dangers they face and how to stay away from them. (Alli, 2008)

The forestry industry is one of the most hazardous industries in which to be employed. Analysis of work-related fatalities in New Zealand ranked forestry worker fatalities fourth highest among occupational groups, with 121 deaths per 100,000 workers per year. Generally, being a forester is characterized by the combination of personal and environmental risks (health and safety). Being a forestry worker is a physically demanding one, with workers experiencing as much energy daily as an athlete would running a marathon (Lilley et al., 2002). Forestry workers are faced with many hazards on their day to day operations. Some of the hazards include branches falling, injuries from equipment used, weather conditions as they get exposed to cold, heat and wet weather. Transportation to and from the worksite also makes forestry work one of the most dangerous jobs (Melemez, 2015).

Even though some employers make sure there is extensive training on safety to their employees, most workers don't get the chances to these safety training. With this in place, most workers do not know their rights and are unaware of the laws entitling them to a safe workplace and medical care if they are injured. Occupational accidents are completely brought about by preventable components which could be eradicated by applying already existing policies and measures. Measures and procedures intended to prevent, control, lessen or take out occupational risks and dangers have been created and used consistently throughout the years to keep pace

with innovative and financial changes. Ghana Labor Act 2003, Act 651 necessitates that businesses ought to guarantee that their representatives are not presented to conditions that would lead them to work-related injuries or ailments. Along these lines, the state of the working environment ought to be harmless; that there is a protected method for entering and leaving the work environment; that machines and gear are safe and without hazard to employees; and that work frameworks are sorted out in a secure way (Slappendel et al., 1993).

Forestry workers, especially in most developing countries, including Ghana, are exposed to harmful factors that cause them to suffer from work-related injuries. Amongst such things are noise, vibration, extreme temperatures, dust, exhaust fumes (mainly carbon monoxide), and constrained body positions which are detrimental to the health of these workers. Chainsaws which happens to be the most used tool by forest workers in Ghana, can be considered one of the most dangerous activities in forestry.

2. Aims of Thesis

The main aim of the thesis is to describe the current state of forestry in Ghana with a focus on occupational safety and to describe the subjective views of the future development of the problem and to suggest possible steps that could bring positive results.

3. Literature Review

3.1 Current overview of Ghana's forest

Ghana was blessed with forest assets which were essential for her advancement and future success. Initially, Ghana's woodlands secured around 36% (84,000 km²) of the all-out land territory of the nation (Rice & Counsell, 1993). Records do demonstrate the presence of generally undisturbed forests, which harboured plentiful biodiversity, protected delicate soils, and directed the stock of rare water assets (Glantz et al., 1985). Be that as it may, deforestation and worldwide environmental change impacts are essentially causing a quick loss of biodiversity in the nation.

The damages caused to the forests and the loss of biodiversity in Ghana have increased rapidly (Dixon et al., 1996). Ghana's forest land is as of now evaluated at 81,342 km² and represents about 40% of the total land area, of which around 17,845 km² are known to be under reservation. The forest resource is comprised of 11,590 km² of production forest; 4,323 km² of protection forests; and around 1,980 km² of game reserves (Kpontsu, 2011). Ghana, in the same way as other tropical nations, keeps on losing its forest cover at a disturbing rate. Between the year 1990 to 2005, Ghana has lost about 1.9 million hectares of forest and the yearly deforestation rate is 2.0%.

The government found a way to address the deforestation issue by presenting the Ghana National Plantation Project to plant 20,000 ha each year (Domson et al., 2007). The greater part of the woodlands has lost their perfect inside living spaces that are basic for the insurance of powerless species (Bingley, 2013). In 1992, it was assessed that just about 1.5 million ha of "unblemished shut backwoods" were staying in Ghana. It is evaluated that 20,000 hectares for every annum of the held zone are lost to agribusiness or through bramble fires and other human exercises (Tabi Agyarko, 2001).

The woods are presently described by over the top reaping of logs, a decrease in standing volumes of species, lessening asset base, species exhaustion and loss of biodiversity. About 14%

of the complete, lasting timberland saves in Ghana are without enough woods spread. The most noticeably terrible influenced territories are the clammy semideciduous North-west and South-east subtype of backwoods zones (Tabi Agyarko, 2001). The variables are causing the consumption of the timberlands to incorporate unnecessary lawful and unlawful logging, impractical cultivating strategies, yearly bushfires, surface mining and infrastructural improvement. (Kpontsu, 2011).

3.2 Sustainability of forests

Ghana has 266 forest reserves, 216 of which occupy 1,634,100 hectares in the high forest zone (Hawthorne & Abu Juam, 1995). The forest reserves were originally established to promote ecological stability, watershed protection and windbreaks while seeking to maintain the flow of products for socio-economic development. In 1993, it was estimated that in areas outside permanently reserved forests, there was extreme deforestation pressure, leaving an estimated 400,000 ha of forest cover ("off-reserves") from which comes most timber supply. The forest reserve has about 15,000 ha of timber plantations which are mainly, (*Tectona grandis*, *Cedrela odorata* and *Gmelina Arborea*) and these plantations provide the source of transmission poles for most of the cities and rural electrification (Kpontsu, 2011).

Recognizing the economic and environmental benefits from such plantations, private interests and communities have planted trees on an increasing scale around the country. In 1986 there was a forest inventory and based on that forest reserves in the high forest zone were put in classes according to the condition of the estate (Ghartey, 1989). Apart from timber-production and protection areas, 32 per cent of the forest reserves are in a degraded state. There is a need for rehabilitation by natural convalescence of some 122,000 ha and reforestation by conversion of 397,000 ha to timber plantations to increase their productive ability.

3.3 Causes of forest degradation in Ghana

The forest protection problem in Ghana is multifaceted. In the semi-deciduous zone of the forest mostly preferred commercial species have attracted intensive logging, a sensitive

environment under threat of desertification. Also, illicit logging increased to take advantage of the FD's incapability in checking timber felling and ensuring concessionaires' compliance with prescriptions

(Kpontsu, 2011) identified these problems in Ghana:

- Traditional bush fallow cultivation is made possible as a result of the burning of forest and grassland. Sometimes, there is a need to allow enough vegetal cover to develop. However, increasing population growth over the last two decades has not only shortened the fallow period but also increased demand for land. Increased cash cropping, urbanization and development have compounded such a demand.
- Most forest degradation in the moist semi-deciduous zones has been the cause of bush burning. Most of the trees that are more prone to fires are the pioneer trees that are of little economic merit the future. A fire could be the greatest threat to the long-term survival of the forested area in Ghana.
- In the High Forest Zone there is a very serious threat to the forest due to mining and quarrying, especially by small-scale operators, and large-scale mining of bauxite, manganese and gold. (Donkor & Vlosky, 2003).

3.4 Forest protection in Ghana

The FD embarked on a forest protection strategy in 1994 and aimed at protecting the diversity, quality and sustainability of the forest estate due to these impacts. The tactic ensures that such disturbances take place only after careful environmental protection is the "fine-grained protection" which was a strategic tool that was applied to all forest uses, including harvesting, plantation development, farming and mining impact evaluation. The tactics aimed at keeping the integrity of the forest ecosystem and its biological content to ensure the endemic status of species. The "large-grained protection" was implemented to forbids disturbance in whole forests to ensure environmental stability and biodiversity conservation (Oduro et al., 2014).

3.5 Ghana's Policy on Occupational Health and Safety

Ghana's work related security, wellbeing and worker's welfare enactment began with the Factories Ordinance of 1950 which was in this way supplanted twenty years after the fact by the Factories, Offices and Shops Act, 1970 (FOSA) (ACT 328). The FOSA has not seen any noteworthy change as far back as its declaration around forty years prior. The non-requirement of the FOSA has added to government's powerlessness to perceive the overall fast changes in OHS enactment that takes into cognizance current progression and the difficulties of Globalization (Appiah, 2014).

In Ghana, the principal wellbeing enactment was sanctioned in 1965 with the entry of the Industrial Relations Act, (Act 299, 1965). This was trailed by the Factories Act (328) in 1970. In 1987, the Workmen's Compensation Law (PNDCL 187) was likewise passed to empower laborers get pay for wounds continued at work. In 2003, the Labor Act of 1965 was changed and supplanted with Industrial Relation Act of 2003 (Act 651). Segment 118 of the Labor Act of 2003 gives a rule on general wellbeing and security conditions (Appiah, 2014).

3.6 Importance of occupational health and safety

It is a legitimate concern for workers to have a living, and furthermore to arrive at mature age in sound conditions (WHO, 1995). These interests are not opposing but rather reciprocal to organization interests. Associations have customarily assessed their health as far as the primary concern (Herbert & Landrigan, 2000). Be that as it may, with past research revealing huge monetary and human expenses related with unfortunate associations (Cooper, 1994), human asset experts have started to situate sound working environment projects and exercises as a wellspring of upper hand to abridge expanding social insurance costs; aid the fascination, securing and maintenance of representatives; better deal with the business worker relationship; address the issues of an undeniably assorted workforce, and lift worker spirit (Fulmer et al., 2003).

The objective of numerous associations has been to prevent becoming unhealthy rather than improving health. However a developing concern that monetary wellbeing associates with

interests in worker prosperity (Goetzel et al., 2001), a condition which is bit by bit putting health and security issues at the front end of work. Certainly, the expenses of dangerous, upsetting and unfortunate working environments are awful in close to home, monetary, and social terms (Kelloway & Day, 2005) and in this way require quick consideration. The previous decade has seen an expanding number of productions tending to mediations planned for forestalling work-related disease and injury and workers health.

The growing interest and investment in working environment brings up no issues as money saving advantage investigation of the topic is bound to go in support of it. An attestation by (Frost & Robinson, 1999) state's that numerous business researchers perceive the significance of healthy associations and healthy individuals. For example, a 2007/2008 overview by the Health and Safety Executive (HSE) on business related disease assessed 34 million lost work days; 28million because of work related ailment and 6 million because of working environment injury (Kerr et al., 2009). Deciphering this in money related terms implies a disintegration of a piece of the overall revenues of associations. Jones et al., 1998 in a comparable report revealed that 14% of the individuals in the United Kingdom who resigned early did so due to sickness and part of these ailments were believed to be the aftereffect of working conditions or possibly aggravated by working conditions.

The conviction that labor is expandable (Stout, 1974) and those associations can stand to lose a portion of their staff just to be replaced in a matter of moments. Associations never again can stand to lose experienced and loyal workers through ill-health brought about by unfortunate working conditions as the expense of enlisting, choosing, creating, spurring and holding new workers who take over from experienced workers lost through business related sick wellbeing stays limitless. OHS in this way stays a significant thought for all Organizations, especially associations occupied with high hazard tasks like the mining, logging and development businesses. Great OHS Practices give a more secure workplace as well as improve specialist assurance and profitability. (Horberry, 2014)

By seeking after great OHS rehearses, organizations face less work environment wounds and advantage from higher representative degrees of consistency and improved corporate

picture. This diminishes the expenses related with creation delays, enrolling new staff and supplanting hardware and maintains a strategic distance from the subsequent vulnerability and outstanding burden pressure set on associates (Horberry, 2014). Organizations who endeavor to improve their OHS execution make more secure work environments, which advantage bosses and representatives as well as their families, their networks and their economies on the loose. This is confirmed by the impact of the Longford gas blast in 1998, which left the territory of Victoria in Australia without its essential gas provider for 20 days. As gaseous petrol was broadly utilized in houses in Victoria for cooking, water warming and home warming, numerous families persevered through 20 days of cold showers and cold evenings.

Further misfortune to enterprises because of the emergency was assessed around 1.3 billion Australian dollars (Hopkins, 2001). The developing importance of the idea has prompted a few researchers upholding for it to be considered as a presentation variable much like creation, benefits, deals, quality control or client grievances (Kivimäki et al., 1995). Taking into account that working grown-ups spend in any event a quarter to 33% of their cognizant existence grinding away (Harter et al., 2003) and the way that activity fulfillment is evaluated to represent a fifth to a fourth of the fulfillment in grown-ups (Harter et al., 2003), OHS issues in associations, that incorporate the passionate, physical, compound and organic exposures of work ought to hold any importance with all businesses. National economies additionally appreciate the advantages of a flourishing OHS arrangement as the advantages gathered to businesses will in general stream down as tax collection and a decrease on other social administrations (e.g., human services offices, social help benefits).

An exclusive expectation of OHS connects emphatically with high GNP per capita (WHO, 1994). The nations putting most in word related Health and security show the most noteworthy profitability and most grounded economy, while the nations with the least speculation have the least efficiency and the most vulnerable economies (WHO, 1994). Hence, dynamic contribution to word related wellbeing and security is related with positive improvement of the economy, while low interest in word related health and security is a detriment in the monetary rivalry.

3.7 Work safety among foresters in Ghana

Working environment safety and health is a critical worry for all breadwinners, businesses/the executives and the general public. This is on the grounds that working environment wounds and mishaps have numerous consequences on the life of the individual specialist just as others in the public eye. Therefore, nations, as assorted as they may be, have set up components to guarantee the safety of workers through a few managerial, strategy and legitimate instruments. Without a doubt, today the safety and strength of workers is viewed as a worldwide human rights issue.

Safety and soundness of workers is an integral part of human security and in that capacity safe work isn't just stable monetary approach; it is a fundamental human right (Kofi Annan, 2002). At the work environment all exercises and arrangement must be in the correct situation to protect and defend human lives from work related mishaps and sickness. In Ghana, timber industry is one of the ventures that utilizes immense and complex machines in their tasks. It is additionally an industry which its surrounding is inclined to mishaps taking a gander at the developments of machines and other heavy equipment's. This implies it is vital for these timber organizations to set up health and security strategies set up that will shield their workers from business related mishaps and sickness. Although a large portion of these measures set up by these organizations are ordered by law, yet others depend on the way that the employer needs to expand efficiency by constraining worker hours lost because of mishaps and wounds that happen at the work environment.

On the off chance that worker hours lost keep on expanding even though these timber organizations are going through immense totals of cash advancing health and security, at that point the effect of these measures can be found negatively and targets set can't be accomplished since employee performance will be influenced dependent on worker hours lost. The inverse is the situation in a circumstance where safety and security strategies set up by these timber organizations is affecting emphatically on employee's presentation dependent on reducing fatalities and helping them to accomplish their objectives based on increment number of workers contact hours with the association. Since occupational health and security policies set up by

organizations includes cost, one needs to evaluate the genuine effect on occupational health safety and security strategies on representatives' presentation.

3.8 Sources of safety hazards in forestry work

Security in the forestry sector division relies upon coordinating people's work abilities to the conditions under which they perform their tasks. The closer the psychological and physical necessities of the work approach the worker's abilities (which, thus, fluctuate with age, understanding and health status), the more outlandish safety is to be yielded trying to fulfill creation objectives. At the point when individual limits and working conditions are in an unstable parity, diminished individual and aggregate security is inescapable (iloencyclopaedia.org, 2011)

There are three safety of security risks identified with working conditions (Figure 1): the physical condition (atmosphere, lighting, territory, sorts of trees), insufficient safety laws and benchmarks (lacking substance or application) and improper work association (Technical and human).

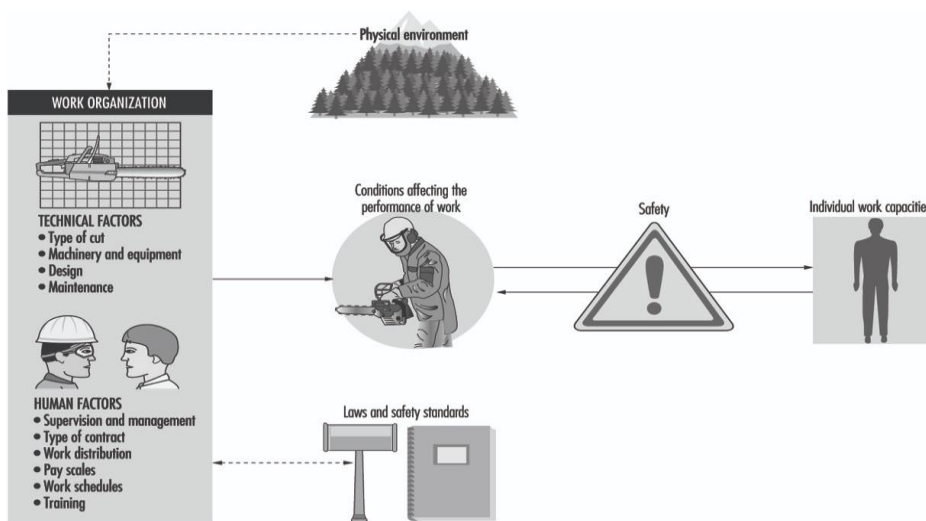


Figure 1. Determinants of safety hazards in forestry work.

Source: (James, 2005)

3.9 Climatic conditions of the working area

There is scientific evidence to prove that, in hot climates, the combination of heavy work and environmental heat can lead to fatalities (Smith & Sirois,1982a) which are exactly the case in Ghana. In regions with cooler climates, heat is more likely to contribute to accidents through its effect on discomfort and fatigue-induced changes in work behavior. A study on the effects of heat exposure on production and safety behavior (Smith et al.,1986) found slight (but no significant) increases in unsafe behavior. Unsafe behaviors included a reluctance to wear safety equipment, a problem that Fibiger (1981 b) also noted concerning the non-use of ear muffs in hot Australian climates. Cold winter temperatures in Finland were identified as the most harmful factor in maintenance work (Vayrynen, 1984). Wet weather may increase the risk of injury among silviculture and logging workers by creating slippery conditions (Houghton, 1990).

Forestry workers may be subjected to outrageous warmth and cold. High temperatures lessen work capacity and may prompt warmth stress and drying out. Dangers can be decreased by for example sun covers, normal intake of water and wise utilization of rest periods, and by attempted the heaviest work in the coolest hours. Customary nourishment consumption, adequate attire and adequate offices for drying garments can lessen the hazard to human safety presented by blistering or chilly climate (iloencyclopaedia.org, 2011).

3.10 Topography and site factors

The slope and soil type is also a factor of influence to work safety. Forestry operations which often occurs on steep slopes has more risk of accidents due to the machines used. Also areas with finely textured soils (e.g. clays) becomes slippery when wet which increases the risk of accidents involving heavy machinery. (ilo encyclopaedia.org,2011).

In an overview of harmed loggers (Buskin & Paulozzi, 1987) 66% of respondents said that at least one regular condition added to their physical issue. About 20% considered substantial brush or ground spread to be mindful, while marginally over 10% accused soak territory. About 10% demonstrated that spring poles or wood under strain caused their physical issue. Managing strain in wind thrown trees presents a particular risk. (Gaskin et al., 1989)

reports that in 1988 a high extent of injuries in New Zealand logging happened in the wind throw tasks that came about because of a typhoon. In Poland, the challenges related to collecting stands influenced by wind/snow harm and creepy crawly assaults have been connected to increments in injury rates (Kubiak, 1985).

The steepness of western woodlands of the United States and the more noteworthy size of trees was recommended by (Paulozzi, 1987) as a clarification for the finding that the logging death rate in Washington State was higher than that in Ontario. In thick brush and harsh territory, administrators can lose their parity and fall onto the cutting apparatus (Slappendel et al., 1993). During delimiting, loss of one's a dependable balance is an issue. (Gaskin et al., 1989) takes note of that of 84 delimiting wounds answered to an industry-wide mishap detailing the plan, 28 included tumbles from the log. (Vik, 1984) discovered little contrast in the physiological outstanding task at hand when work was acted in soak territory contrasted with the conventional landscape. On the chance that outstanding task at hand is substantial (over 40% of maximal oxygen-consuming force), individuals seem to remunerate by changing their yield.

3.11 Tree Felling and chainsaw usage

The factors mentioned above present genuine dangers to workers. Preparing in safe practices and the utilization of satisfactory security gear can reduce such dangers. The chainsaw tool is the riskiest equipment in forestry, its administrator the most exposed worker. Tree felling and crosscutting are the exercises where genuine and deadly accidents are well on the way to happen. Work including hung-up trees as well as wind-tossed trees is especially dangerous (Cedergren, 2016).

Chainsaw kickback is another hazard which occurs when the upper quarter of the bar nose encounters an object, as seen in Figure 2, which results to an instantaneous "kicking" of the chainsaw, potentially towards the operator. Kickback risks can be reduced when the the chainsaw is opeated with two hands on the saw handle and also by avoiding contact with the bar nose and the tree, It shouldn't be used above the shoulders and it must always be infornt of

the operator when in use. Kickbacks happens to be an issue to occur when the guide bars of the chainsaw been used is smaller. (Cedergren, 2016).



Figure 2. Chain-saw Kick-back.

Source: (James, 2005)

3.12 Noise and Vibrations from machines

The commotion from cutting tools such as chainsaws and brush cutters can prompt hearing misfortune if hearing protection isn't utilized. The utilization of hand-held force apparatuses, for example, cutting tools such as chainsaws and brush cutters can likewise cause hand–arm vibration, which can influence blood course in the hands and lower arms and harm nerves, ligaments, muscles, bones and joints. The vibration dampers utilized in most current cutting apparatuses can lessen this issue.

Administrators of machines, for example, skidders and loaders might be dependent upon entire body vibrations, which can cause lower back torment just as dreary strain wounds. Entire

body vibrations can be diminished utilizing vibration-damping seats in machinery and diminished introduction through employment turn (ilo encyclopaedia.org, 2011).

3.13 Transportation of logs

Log arrivals and reloading terminals are among the most hazardous workplaces in Forestry. They are occupied spots, and a wide range of activities, for example, stacking and emptying, debarking, cutting and chipping are regularly led all the while. Logs might be put away in unbound heaps, and downpour and snow can make the ground dangerous. Moving vehicles are the principle risk (Figure 3). Dangers can be decreased utilizing defensive gear by administrators, the satisfactory upkeep of apparatuses and machines, sufficiently prepared administrators and bosses, and the physical partition of manual and machine-based undertakings. Loader administrators may work for an unexpected association in comparison to truck drivers, and there ought to be handily comprehended, pre-orchestrated methods for imparting risks and safe frameworks of work between them on log arrivals and at reloading terminals. Log trucks appropriate for the activity ought to be very much kept up and worked via prepared and appropriately authorized drivers. Over-burdening ought to be maintained a strategic distance from, and folios ought to be utilized to make sure about burdens (Cedergren, 2016).



Figure 3. shows a risky way of transporting timber in Ghana

Source: (Plantation Forestry Solutions Best Operating Practices Documentation Forestry Solutions, n.d.)



Figure 4. shows a man illegally harvesting a tree and wearing no protective gear.

Source: (Welcome to iBAN, n.d.)

3.14 Chemical and Biological Hazards

The forestry sector has a scope of chemical risks, including the potential for introduction to vapor related to cutting machines use and to pesticides, and biological hazards, for example, the potential for unfavorably susceptible responses to plants, dust, and creepy crawly chomps. Numerous country individuals gather timberland items alone in remote areas and might be presented to a scope of biological hazards just as to extraordinary climate, mishaps, and – particularly for ladies, kids and the old – ambush (Cedergren, 2016).

3.15 Work Organization

The term specialized work association alludes to operational contemplations of forestry workers, including the kind of cut, the decision of machinery and creation equipment, gear plan, support practices, size and arrangement of the work team and the time distributed in the creation plan. How forestry work is organized will have a bearing on injury rates. Many of the factors

that have been grouped under this heading are beyond the control of the individual operator; instead, they are in large part shaped by the decisions of managers and employers.

3.16 Mechanization of cutting

There are two principal sorts of cut utilized in forestry workers' activities, recognized by the innovation used to fell and debranch trees: traditional cutting, which depends on mechanical saws, and mechanical cutting, which depends on machines worked from control cabins. Mechanization of cutting is known to extensively decrease the recurrence of injuries. This is generally clear for mishaps happening during creation tasks and is because of the substitution of mechanical saws by machines worked from remote control lodges which separate administrators from hazards. Simultaneously, in any case, mechanization seems to expand the danger of mishaps during machine upkeep and fix. (Laflamme & Cloutier, 1988) analyzed the accident registers of two organizations.

They reasoned that the automation of delimiting, and debranching activities fundamentally decreased the general potential danger of injury on motorized locales when contrasted with customary ones. In any case, while the dangers related with creation assignments decline, there is a move in chance introduction to auxiliary undertakings, for example, upkeep. (Väyrynen, 1984) found the accident recurrence rate for support workers to be about as high concerning engine manual lumberjacks; while (Axelsson, 1981) alludes to Swedish investigations that have discovered the rate to surpass that of chain saw administrators. Issues related with maintenance work incorporate chilly climate, the need to work barehanded, tumbling from heights, and the strenuous work stances brought about by poor openness of machine parts (Väyrynen, 1984).

3.17 Machine design Machine and equipment maintenance

Mistakes made at the structure stage can prompt deficiencies in the plan of machines, instruments and gear. These plan insufficiencies can contribute legitimately or in a roundabout way to physical injury.

Other than vibration and noise, an expanded danger of injury has been connected to insufficiencies in forest machine structures that influence access (Gaskin et al., 1989) permeability and vibration. For instance, (Gaskin et al., 1989) found that while cable skidder administrators may jump on and off the machine in any event 80 times each day, they chip away at skidders that have fundamental plan imperfections, including high height to the quick advance and excessively high or nonexistent get rails. While no examinations were distinguished that connected injury rates to the explicit structure includes, the broad acknowledgment of plan as a hazard factor has prompted the distribution of ergonomic agendas in different nations .(Slappendel et al., 1993)

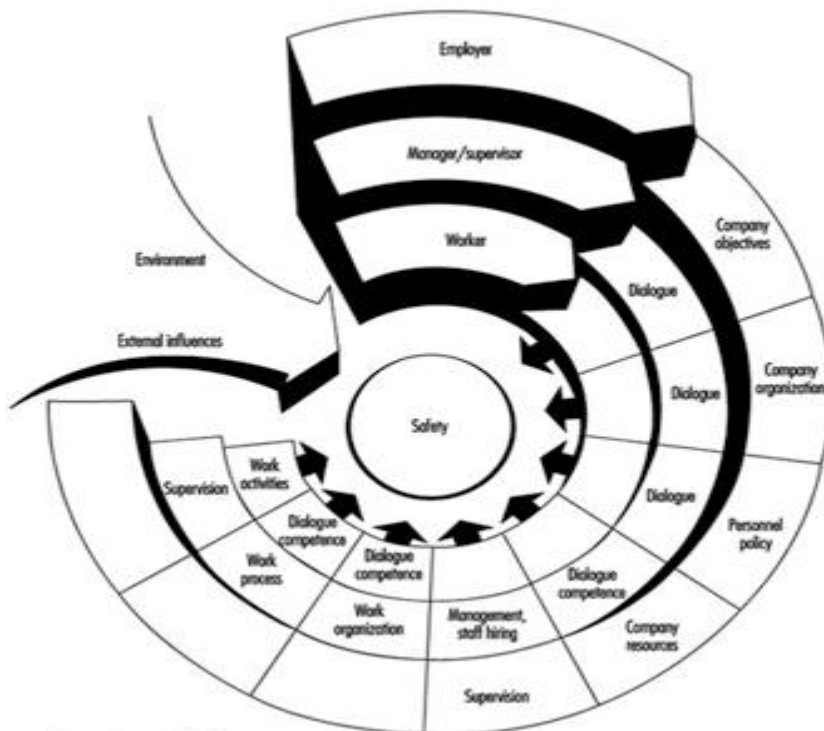
Maintenance practices in the forestry are generally restorative as opposed to preventive. Different working conditions, for example, creation pressures, the nonappearance of exacting support rules and calendars, the absence of proper upkeep and fix destinations (carports, protects), the cruel conditions under which these tasks are performed, and the absence of sufficient instruments—may clarify this circumstance. What's more, financial limitations may work on one-individual tasks or locales worked by subcontractors.

3.18 Supervision and work schedules

Supervision of forestry workers work isn't simple, because of the consistent movement of worksites and the geographic scattering of workers over various worksites. Creation is controlled through aberrant systems, of which creation rewards and the support of unstable business status are likely the most treacherous. This sort of work association doesn't support great security the executives since it is simpler to transmit data concerning wellbeing rules and guidelines than it is to guarantee their application and assess their down to earth esteem and the

degree to which they are comprehended (Figure 5 shows a hierarchy of roles). Directors and supervisors should be certain that they have an essential obligation regarding security. As can be found the specialist controls not very many of the components that decide wellbeing execution (ilo encyclopaedia.org, 2011).

Long work routines frequently bring about diminished cautiousness and lost tangible sharpness, the two of which may have impacts on individual and aggregate security. These issues are disturbed by the irregularity and quickness of rest periods. Arranged breaks and most extreme working hours ought to be watched. Ergonomic research exhibits that yield can be expanded that way (ilo encyclopaedia.org, 2011).



Source: Weltmann 1992.

Figure 5. Human factors have an impact on safety in forest work.

Source: (James, 2005)

3.19 Availability of occupational safety standards and protocols.

Globalization in the wood industry prompts subcontracting and accessibility of guidance manuals, which improves health and security gauges in many developing nations (Amponsah-Tawiah & Dartey-Baah, 2011). It is accepted that if the parameters of administrative benchmarks are clung to and executed effectively, there is an incredible chance that the workplace will get more secure (Tavares et al., 2015). Territories where standard safety and security systems are not watched, wearing of eye protection, and wearing of 'high permeability vest, despite everything make space for the event of injuries (Smalley, 2011). To be sure, the key might be the better authorization of work environment benchmarks and focused on preparing of those with the control over these conditions (Roelofs et al., 2011). The sawmill Inspectorate Department guarantees that all work environments keep up the least norms of safety and security recommended, prompting a decrease in occupational wounds (Kheni et al., 2006).

3.20 Exposed to sharp tools and machines

Inappropriately planned tools and machinery can apply impact on the wellbeing and security of sawmill workers (Vyas et al., 2011). Past information likewise recommend that risky machines and devices inside the workplace are a portion of the probable reasons for word related wounds (Abdalla et al., 2017). University of Ghana <http://ugspace.ug.edu.gh> 8 Furthermore, the executives or industry proprietors don't give satisfactory money to the buy and routine upkeep of defensive clothing, processing machines, gear and devices that are connected to the wellbeing necessities of laborers, prompting wounds among workers (Kwame et al., 2014).

In other adjusted wellbeing measures, all arranging machines outfitted with an air vacuum framework and the sawing which produce enormous amount of wood dust were arranged away from the workers allocated to these worksites (Brefo, 2017). Studies show that around 45 percent of work injuries are because of reckless conduct by workers in utilizing machines while the other 55 are because of physical dangers like inappropriately monitored machines (Abdalla et al., 2017). In different investigations, the expanding number of injuries

brought about by the dull movement of machines has become a basic factor in work environment safety that despite everything needs consideration (Jaffar et al., 2011).

3.21 Availability and use of personal protective equipment

(Mitchual et al., 2015) proposes that the administration of the sawmill needs to accomplish more to uphold the practice of safety, particularly the utilization of individual defensive equipment, to decrease risks and wounds related with wood handling in the firm. Lamentably, a few managers urge workers to utilize individual defensive equipment while never considering the presentation of prevention and control quantifies that could limit the health-related dangers of the workers (TUC, 2020). Accident's counteraction programs, including the utilization of defensive equipment, security instruction, machine guarding, a work grant framework, powerful supervision at work locales and the requirement of industrial facility laws and guidelines, are prescribed to improve coincidental injury and passing in the production lines (Ezenwa, 2001). Studies that had analyzed the viability of respiratory Protective Equipment (RPE) had indicated that these gadgets decreased the seriousness of intense respiratory inconveniences (Brefo, 2017), diminishes profitable work power injuries which University of Ghana <http://ugspace.ug.edu.gh> 9 prompts practical advancement (Jilcha & Kitaw, 2016). Furthermore, a sensible and powerful intercession to forestall numerous occupational injuries would be the presentation of individual defensive equipment in combination with compelling specialist wellbeing preparation (Vyas et al., 2011). To be sure, many are the associations that work under the presumption that the arrangement of individual defensive equipment is adequate to forestall occupational mishaps and ought to be supported (Amponsah-Tawiah & Dartey-Baah, 2011). Figure 4 is a Photo showing non-use of PPE while cutting down a timber.

3.22 Age of workers

An adequate collection of information shows that older age is related to more unfortunate occupational asthma forecast (Baur et al., 2012), and propelled age has reliably been related to an expanded occupational injury casualty rates (Herbert & Landrigan, 2000). The fundamental

assemblage of literature shows that work related injury rates stayed high after age 20 however diminished in the older (Mock et al., 2005). In different examinations, factors fundamentally connected with hospitalization for asthma included older age and presentation to specialists other than isocyanates (Brefo, 2017). Workers 65 years or more established had a working environment casualty rate 2.6 occasions the pace of workers matured 16 through 64 years (Herbert & Landrigan, 2000). Relationships of hearing misfortune with age and noise introduction length were noteworthy as concentrated by different scientists in the (Pouryaghoub et al., 2007).

3.23 Occupational injuries associated with forestry workers

Forestry workers could be presented to different dangers that lead to injury (Brefo, 2017). Timber preparation includes molding, cutting, handling and promoting of wood. These exercises open workers to different Hazards with negative health impacts, which incorporate injuries to different parts of the body (Diwe et al., 2016). Different exposures have been connected already to instances of incessant and intense non-dangerous injuries at various phases of wood preparing, particularly among workers in sawmills, wood chip and debarking tasks, compressed wood manufacturing plants, logging and finishing (Brefo, 2017). Even though these injuries are pervasive at various handling stages, lumberjacks who play out the primary preparing activity are the most in danger among workers of the wood items assembling and inventory network (Brefo, 2017). During the 1980s, Norwegian sawmill laborers were as often as possible presented to widely high spore fixations, especially, those working in the wood trimming divisions, after the presentation of furnace drying and indoor arranging of the timber (Rydjord et al., 2007). Results of wood handling, for example, wood residue and clamor are likewise notable for their occupational wellbeing impacts. Work environment exposures happened fundamentally through direct skin contact and, to a lesser degree, through breathing in chlorophenol fumes, mist concentrates, and tainted sawdust (Heacock et al., 2000).

3.24 Working Conditions of foresters in Ghana

In Ghana, wood production contributes around 11 percent of foreign profit; it utilizes more than 100,000 workers and gives employment to over 2.5 million Ghanaians (Akuoko et al., 2013). Regardless of this commitment to Ghana's economy, the tasks of the Wood Processing Industry (WPI) are for the most part connected with elevated levels of work-related dangers with ensuing danger to wellbeing. Records at the Department of Factories Inspectorate from 1987-1998 showed that around 50 percent of lethal mishaps in the industrial area originated from the wood processing division in Ghana (Boateng & Nimako, 2000). Individual's dynamic outside, particularly in agribusiness and forestry, are presented to wellbeing perils from creatures, plants, microscopic organisms, infections, etc. to a greater degree than is the remainder of the populace.

There are issues like biological hazards like plants and wood, contaminations by creatures, Malaria, Recurrent fever, being assaulted by harmful snakes, Spiders, Scorpions, Bees, Wasps, Ants and so forth. Most foresters in Ghana work under negative conditions which represent a great deal of dangers to their wellbeing and prosperity. Particularly among the individuals who perform forestry activities unlawfully. An enormous extent of the timberland is lost because of the exercises of unlawful logging. These illicit lumberjacks are presented to the riskiest conditions as the logging they perform is generally done at odd hours to a great extent occurring in the night where forestry authorities won't see them. They cut trees wearing no protective clothing.

Poor lighting conditions as flashlights are generally utilized around evening time. They face the danger of being attacked by noxious snakes or assaulted by wild creatures. There have been numerous instances of trees and branches falling on individuals during these activities in night. Indeed, even approved forestry laborers under the forestry commission likewise work with poor defensive garments. For the most part just wearing caps and boots yet more regularly without earmuffs, protective rigging or goggles.

3.25 Health and safety among foresters

Work related health and safety is an all-encompassing methodology towards all-out prosperity of the worker grinding away. As indicated by (WHO, 1995), work related wellbeing incorporates the activities for occupational medication, occupational cleanliness, occupational brain research, security, physiotherapy, ergonomics, restoration, and so forth. Safety on the opposite side includes the insurance of individuals from physical injury (Hughes & Ferrett, 2012). The International Occupational Hygiene Association (IOHA) for the most part characterizes occupational health and safety (OHS) as the study of expectation, acknowledgment, assessment and control of risks emerging in or from the working environment that could weaken the wellbeing and prosperity of workers, thinking about the conceivable effect on the encompassing networks and the general condition (Conventions, 2009). In this way, OHS can be believed to concern the advancement and upkeep of workers in all occupations (WHO, 1995). OHS consequently rise above the sound judgment significance of giving physical security or physical prosperity. It includes two other similarly significant measurements that make it an exhaustive arrangement of work practice; mental health and psycho-social wellbeing.

Numerous authors have likewise added their voices to the significance of Occupational wellbeing and security as in Occupational wellbeing from the writing of (Abdullah et al., 2009) can be portrayed as a sound condition of the body and brain of individuals from sickness coming about because of the materials, procedures or techniques utilized in the work environment, while occupational security is the assurance of individuals from physical injury. In the perspectives on (Dwomoh et al., 2013), occupational wellbeing alludes to a general condition of physical, mental, and passionate prosperity of a specialist. Looking from the perspectives on these scholars, it surmises they all offer a similar view that a health worker is a person who is liberated from sickness, injury, mental and passionate issues that may impede his typical work action or schedule. (Dwomoh et al., 2013) adding their voice to what is implied by Occupational Health and Safety (OHS) considers it to be exercises, forms, or procedural methodologies to ensure and advance the wellbeing and security of workers. That is, to take out all variables, practices, and conditions risky to human wellbeing and security grinding away. OHS upgrades the physical, mental and social prosperity of workers, and supports the advancement and upkeep

of their working limit, just as polished methodology and social improvement grinding away. The term occupational health and security has not been another phrasing as it was utilized by (Dwomoh et al., 2013), to depict all the variables and conditions that influence health and safety in the workplace or could influence wellbeing and wellbeing in the work environment. Associations that are focused on wellbeing and security have approaches that control both administration and representatives in guaranteeing that the workplace is sans injury for their workers.

Occupational wellbeing and security matters are especially basic in the developing world particularly Africa and Asia. Africa is particularly ambushed with hazardous working conditions in businesses, for example, mining, development, manufacturing, and even service. The two mainland are accepted to have the most hazardous practices and conditions in the administration of employment, child labor, the casual economy, sex mainstreaming, work insights, labor investigation and sea wellbeing, mining, HIV/AIDS and the universe of work and worldwide movement (Alli, 2008).

For the arrangements to be completely executed and demonstrated fruitful, Armstrong in 2006 said it is important for the association to include its employees in the improvement. As indicated by a published report in 2001, an expansion in employee association with wellbeing and security issues assisted with decreasing mishap rates from 1.2 to 0.1 per 100,000 worker hours. It likewise uncovered that when workers are assessed for their wellbeing execution, they are incorporated to look for and actualize down to earth security improvement thoughts. Occupational wellbeing and security strategy isn't just required inside the timber business yet as said by (Alli, 2008) all administration establishments ought to be focused on creating one to limit government expenditure and compensation to workers because of wounds and mishaps at the working environment. Be that as it may, for this investigation it will be restricted to just forestry workers on account of the difficulties they experience to get wood prepared into the timber and because of the overwhelming machinery expected to finish their work.

This implies if diminishing Lost Time Injury Frequency Rate has a positive effect on worker's performance, it is wellbeing and security estimates set up by an organization that will cross over any barrier between mishaps/wounds and workers' presentation.

3.26 Consequences of workplace accidents and injury

Business-related setbacks and diseases are costly and can have various certifiable quick and roaming ramifications for the lives of forestry worker and their families. For forestry workers, a segment of the quick costs of harm or illness are the torment and encountering the harm or affliction; the loss of pay; the possible loss of work; and human administration costs. Despite torment and possibly destroying fiscal effect, hurt forestry workers and their families consistently persevere through an authentic budgetary hardship regardless of the portion of forestry worker's compensation. Regardless, no portion is adequate compensation for a passing or an enduring incapacity.

Exactly when disasters occur, various things result from it: damage to property, wounds to people and loss of time, diminished age, etc. Working condition wounds and diseases are of worry since the power costs on hurt forestry workers and their supervisors, anyway on society. The purposes behind injuries incited the researcher to additionally take a gander at the budgetary results of these injuries. The assessment found from the forestry workers how wounds and incidents they bolster impact their display at work similarly as how they are affected money related and other social results. Most by far of these forestry workers are hitched and are suppliers; others who are not hitched have dependents and all things considered these incidents have proposals for their dependents. According to Nagash, 2002 and Appiah, 2019 "One of the most clear indirect costs is the human suffering caused to forestry workers' families, which can't be compensated with money."

For the most part, the cost of most business-related setbacks or infirmities to forestry workers and their families and supervisors is especially high. On a national scale, the assessed cost of word related setbacks and afflictions can be as high as three to four percent of a country's

Gross National Product (Clarke, 2012). The fiscal adversity related to these disasters and afflictions is evaluated to signify four percent of the world's national thing (Machida, 2013). This financial weight is enormous and now and again, it outperforms the hard and fast spending arrangement of the national prosperity structure (Mikheev & Goelzer, 1996). The total cost of business-related setbacks or diseases may never be known considering the way that there are a colossal number of indirect costs that is difficult to check other than the more obvious direct costs.

3.27 Measures to Ensure Safety Among forestry workers in Ghana

The competent authorities should devise and maintain a national policy that adopt rules and regulations to ensure the safety and health of workers employed in forestry jobs and to protect people at, or near a forestry worksite from all risks which might arise as a result of the work activity.

Noise and vibration from chainsaws are known hazards as well. Operators of chain saw have the tendency of Hearing loss due to the noise from the chainsaw used in working, but operators can always reduce the risk by wearing adequate ear protection. The introduction of vibration-damping chainsaws can also subdue chainsaw vibration injuries; although still available in some countries, chainsaws not equipped with this feature should be avoided.

The important proposals and recommendations about safety training and management should involve new training programs about working procedures just as about safety and health, with work encounters for chainsaw lumberjacks including updates and control reviews, for example, the flexibility of outside requests and new advancements, denying the old techniques for educating and for intuitive apprenticeship dependent on critical thinking. (Nordin & Comeau, 2003).

The basic pieces of the preparation programs are the degree of investigations of contracted organizations to accomplish an incorporated concentration among security and rules, the learning of safe logging methods in semi-automated works, just as the right utilization of

chainsaw, the utilization and support of Personal Protective Equipment (starting now and into the foreseeable future, PPE), the structure of manual collecting, the anticipation of falls, the counteraction of strains (extending systems), the preparation of street driving and the right use of hand devices (Lefort Jr et al., 2003).

The preparation in health and security of independently employed workers requires an incredible exertion, because sound habits should be accomplished for their prosperity because of the way that they are not under the umbrella of an organization that controls their representatives. Some preparation ought to be finished by sorting out courses for forest proprietors (Albizu-Urionabarrenetxea et al., 2013). At times, training programs are powerful and give good outcomes in the decrease of recurrence and seriousness of mishaps (Bell & Grushecky, 2006). Anyway, there are likewise situations when the viability of such preparing projects cannot be demonstrated because there are not critical contrasts in the mishap rates between organizations with preparing programs set up and organizations without them (Bell & Grushecky, 2006).

Concerning the impact of the mechanization of logging activities in operational wellbeing, the level of mechanization varies from the manual frameworks to the completely motorized ones. In most European Countries, the working conditions have improved because of mechanization, regardless of whether the degree of progress varies broadly from one nation to another. In certain nations, particularly in Central and Eastern Europe, accidents rates are high because the motorization is fragmented because of low creation and the hilly physiography. Additionally, in numerous European local fields are deserted and supplanted by forest land heavily influenced by unpracticed farmers (FAO, 2019).

Before automation, cuts and scratches were the most widely recognized injuries but sprains and slashes have replaced these days. Mechanization decreases significantly the number of accidents yet builds their normal seriousness because there are more tumbles from vehicles and mishaps of individuals being hit by a machine. All things considered the most well-known is because of passes up trees, creatures or minerals (Lefort Jr et al., 2003). There is a decrease

in the number of deadly mishaps of expert laborers because of automation, yet additionally an expansion in the number of non-lethal mishaps (Neely & Wilhelmson, 2006).

Personal protective clothing ought to be given and kept up by the employer, without cost to the workers, at whatever point recommend by-laws and regulations. Employers ought to organize a regular examination by a capable individual at reasonable intervals of all equipment, tools, machines, individual protective equipment, and working environments heavily influenced by the employer as per relevant regulations, necessities or codes of practice (Apud et al., 1989).

Producers ought to continuously improve, by methods for technical and organizational measures, the security and health parts of tools, machines, equipment, and hazardous chemicals fabricated for use in forestry, considering the latest ergonomic research discoveries, therefore to decrease dangers to health and security to as low a level as could be expected. Specifically, the design of chainsaws ought to be improved further to decrease health dangers (Apud et al., 1989).

Since forestry workers are usually seen working in small groups in separate areas, each worker ought to be trained in essential first aid. This training ought to include the treatment of open injuries, and revival. In areas where the work includes the danger of inebriation by chemical or smoke, snake-, creepy-crawly or spider bites or other explicit perils, first aid training ought to be broadened in like manner in consultation with a properly qualified individual or organization (Apud et al., 1989).

3.28 Case Studies 1

This circumstance is muddled utilizing old machines and equipment, poor working conditions, poor security practices, deficient checking, workers' carelessness and poor work pose (Agunbiade, 2015) For instance, research conducted among forestry enterprises in Tamale Metropolis in Ghana additionally showed that a critical number of the workers in the investigation zone didn't utilize individual defensive hardware when working machines or performing tasks that require their use (Mitchual et al., 2015). Because of such industrialized

practices in Ghana, the yearly number of industrialized lethal employment-related accidents and sickness was evaluated to be more than 2,000,000 in the year 2012 (Dwomoh et al., 2013). Most injuries at these forest enterprises were as a result of not using PPE when performing various tasks as depicted by Figure 6 below. About 50% of respondents agreed that injuries were most likely to occur if workers do not wear the appropriate PPE or not PPE at all.

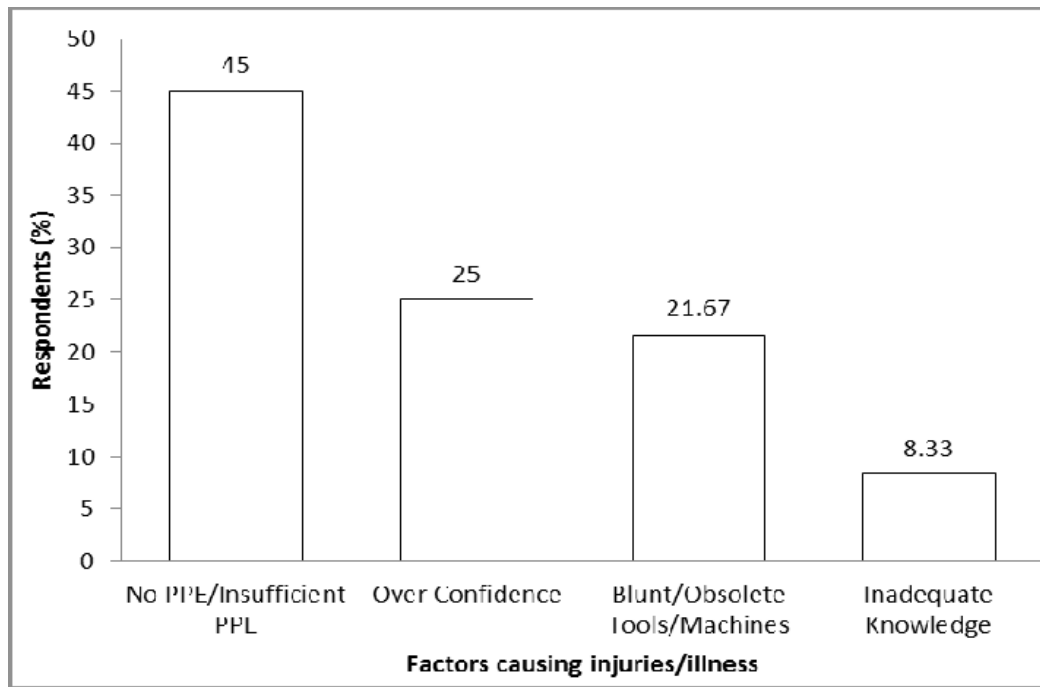


Figure 6. Main cause of injuries in a forest enterprise in Tamale

Source: (Kwame et al., 2014)

3.29 Case Study 2

In 2004, Yoshimura et al directed research on the security and wellbeing states of forestry workers in Turkey. Before their work, there were no insights on the point despite the event of mishaps and medical issues in their ranger service segment. They utilized a questionnaire that asked about wellbeing and wellbeing conditions, work fulfillment, and

aggregate exhaustion manifestations of ranger service laborers. 24% of the respondents experienced accidents during work, a considerable lot of which comprised of cuts by cutting apparatuses or tomahawks. Likewise, most respondents showed that they didn't utilize any close to home defensive hardware (PPE), even though the utilization of PPE is emphatically prescribed to stay away from lethal or genuine mishaps. As for work fulfillment, 43% of the respondents were disappointed with their activity for the most part due to the low compensation and overwhelming work.

The consequences of their work indicated that 24% has encountered accidents while busy working. Because of this, they prescribed that mishap avoidance must focus on those sort of accidents that are specially visited or genuine. Table 1 show the type of personal protective equipment used that numerous mishaps included cuts by chainsaw or axes, some of which caused generally longer times of non-appearance. They recorded three instances of workers being hit by a felled tree,

They additionally talked with workers about their experience of close miss incidents during the earlier year because such occasions are considered to include potential hazard factors for real mishaps, and the examination of these occurrences is huge in distinguishing such hazard factors and taking important measures before mishaps occur (Gandaseca et al., 2001). As appeared in Table 2, 82 respondents (73%) had not encountered any close miss episodes during the earlier year. For instance, visit answers given by the respondents were that a felled tree nearly hit the specialist and that vehicle or truck nearly sneaked off the wood's street.

However, many workers were probably going to overlook encountering close miss episodes essentially because they were not real accidents with the result of an injury. (Imatomi, 2002) controlled a questionnaire for forestry ventures in Japan and found that 172 of 289 respondents (60%) had encountered close miss episodes during the past 1-year time frame. Subsequently, they accept that increasingly close miss occurrences in Turkish ranger service happened than are appeared in Table 2. They suggested that close miss occurrences must be accounted for recorded as a hard copy each day to forestall real mishaps, which happen through the nearness of similar hazard factors as close miss episodes.

Table 1. shows Personal Protective Equipment used by respondents

Personal Protective Equipment	Frequency
Helmet	7
Gloves	18
Safety Boots	4
Safety Jackets	1
Safety Trousers	0
Eye Protection	1
Earmuffs	2

Table 2. shows frequency of experiencing a near – miss incident

Answer	Frequency
Very Often	7
Often	6
Sometimes	8
Rarely	8
Never	82
No Response	2

3.30 Case Study 3

A survey was done among forestry workers in a private forest enterprise in the Brong Ahafo region of Ghana. Questionnaires were administered to the workers to find out information on safety and working conditions and the use personal protective equipment (PPE). It came to light that about 35% of the encountered injuries while working. Most of these injuries happened as a result of the use of chainsaws, axes and cutlasses. Before this survey was done, there were no documented information on the events of injuries and accidents at the workplace. About 80 % of the respondents did not utilize complete personal protective equipment (PPE) during work. The only thing that was worn by almost everyone was safety boots especially harvesting of tree in the forest. Some workers revealed that personal protective equipment has been provided once since their three years of working in the company. They must buy them themselves when they are worn out. This explained why majority of the workers do not put on personal protective.

4. Methodology

The thesis will be based on literary research. Moreover, based on the summary of the available literary sources, a subjective assessment will be made subsequently. A survey was made on the topic by administering questionnaires to workers in a forest enterprise in the Brong Ahafo region of Ghana.

5. Results

In the quest for an occupation, forestry workers are presented to fluctuating dangers and perils. A portion of these are curious to their occupation, while others emerge because of absence of supervision by suitable state organizations. It is against this foundation that this examination was led to look at work environment security and mishap circumstance among forestry workers. Ghana was picked because not much work has been done when it comes to the safety of workers in the forestry sector of the economy

It was discovered that the forestry workers came up short on the best possible PPEs, for example, gloves, eye goggles, wellbeing boots and defensive fabrics that are PPEs was not generally utilized. Despite the host of dangers present at site, just few of the forestry workers were discovered to utilize PPEs during their work. Indeed, even among those who Utilize the PPEs, not of them utilized the full supplement of the required PPEs, for example, security boots, face shields, goggles, nose covers, overalls, gloves, and respirators.

Among the forestry workers who don't utilize any PPEs, some contended that they can't stand to buy them. Others additionally stated that they feel awkward to utilize them while others guaranteed that PPEs were superfluous for their work. Different purposes behind sporadic and non-utilization of PPEs were that, PPEs were not constantly accessible given the cost ramifications; PPEs were given to a partner to utilize, absent mindedness and not staying alert that PPEs were required for even small undertakings.

Research about the utilization of Personnel Protective Equipment (PPE) and wellbeing in forestry harvesting has demonstrated that the PPE intended for laborers' security is now and again not utilized accurately or even it isn't worn constantly. Although their utilization has expanded, there are laborers who despite everything don't utilize any of the recommended gear. Different creators agree that among the less utilized hardware are visual and auditive defenders just as gloves when they are fundamental.

The general frame of mind and view of the forestry workers including the proprietors/experts and their laborers is fatalistic; that is a conviction that most of the mishaps

and wounds are unavoidable piece of their everyday work, and that little should be possible to avoid them. One significant perception found was that, huge numbers of the forestry workers accept that work environment mishaps and wounds are simply 'mishaps', and that these mishaps are an unavoidable piece of their everyday working life. That these mishaps are brought about by misfortune and one simply needs to fulfill oneself with the circumstance implied that they don't pick safe working techniques and strategies.

Lack of proper supervision by managers and forestry authorities to ensure that work in the forest field is done according to appropriate standards. Tasks were found not to assigned to people with the relevant people with the necessary skills and expertise. Most of the workers employed lacked proper training in the field of forestry and the use of mechanized equipment which poses greater risks to these employees.

From the findings of this research work it is highly recommended that employers provide safety training programs for employees in the forestry field as they begin their work and also to have training periodically as they continue to work to refresh their minds on the safety rules and regulations to enhance their safety while at work.

6. Discussion

The health and safety conditions of forestry workers in the Brong Ahafo region of Ghana were surveyed using a questionnaire, as there had been no statistical information on these workers despite actual forestry workers involvement with accidents and health problems. In the region, many forestry workers were living in barracks or caravans located in mountains away from their families and were doing heavy work. The questionnaire elicited information on safety and health conditions, personal protective equipment (PPE) and job satisfaction.

It found that 35% of the workers experienced accidents during work, many of which resulted from chainsaw or axe cuts which confirms the work done by Abdallah et al., (2017) and Akuoko et al., (2013). To diminish the number of fatal accidents, proper training and education should be provided, especially for forestry work on steep slopes. It was also found that most respondents did not use any PPE, although the use of PPE is strongly recommended to avoid fatal and serious accidents as discussed by (Yoshimura & Hulusi Acar, 2004)

In addition, reporting incidents as they occur every day could help to prevent actual accidents, which are nearly as dangerous as near-miss incidents which confirms a similar research done by Imatomi in 2002 in Japan's national forest. Concerning job satisfaction, 50% of the respondents were not happy with their jobs mainly because of low salary and the risks involved. Therefore, increasing the wages of forestry workers can help improve on their willingness to work. The happier a worker becomes the more likely he will be satisfied with his job and more likely to follow precautionary measures at work which will help reduce injuries at work.

Health and safety at the workplace are one of the issues which if neglected could significantly affect the operational efficiencies of a forest enterprise. Injury and health related problems associated with wood processing could seriously affect the socio-economic condition of the worker, his dependents and the company. The result of this study suggests that the respondents were not ignorant of the need for safety practice in the various aspects of their work.

7. Conclusion

Forestry workers in Ghana are presented to numerous risks in their workplace. Despite actual accidents and health problems caused by forestry work there had been no statistical information on these workers. This work has given an insight to the existing problem of the safety among forestry workers in Ghana and confirms findings produced by many researchers in different parts of the world.

Practically all the reports show that woodworkers are presented to different sorts and degrees of occupational hazards going from carcinogenic to non-malignant conditions, bacterial, viral and creepy crawly assaults to physical injury and mishaps. However, wellbeing in the forestry division in Ghana is regularly underestimated by workers and employers. Workers must be furnished with a solid work related conditions by making and executing all security policies and mediations. In the event that workers are provided with PPE's and continually prepared on their legitimate use and security rehearses, workers become certain so fatalities and genuine injuries in the wood industry will be disposed of.

Periodic safety training for employees is to be maintained to keep them updated on the safest ways to conduct themselves while at work and the use of PPE must be enforced at work and Punishment should be given to employees who fail to adhere to the rules for safety. It can be concluded from all the findings that all goals set out for this bachelor thesis have been met.

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