

## Occupational Health Hazards and Problems among Sawmill Workers in Benin Metropolis, Edo State

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**Abstract.** The purpose of this study was to examine the occupational health hazards of sawmill workers in Benin metropolis. Four research questions, relating to occupational health hazards and problems of sawmill workers were raised and answered. The descriptive survey designed was adopted for the study. The stratified random sampling was used to select 100 respondents for the study. The research instrument (questionnaire) was validated by three experts in the Department of Health, Safety and Environmental Education, while test re-test method of reliability was used to determine its correlation coefficient. The data collected was analyzed using descriptive statistics of mean and standard deviation. Findings revealed that sawmill workers are confronted with numerous health hazards associated with sawmilling, and that they adhere to safety regulations. It was therefore recommended that sawmill owners should as a matter of urgency make provision for the unavailable personal protective equipment to prevent workers from contracting diseases related to sawmilling. It was expected that the outcome of the study would be useful in preventing diseases associated with saw milling and also to ensure that there is improvement in adherence to safety regulation by the sawmill workers.

**Keywords:** Occupational Health, Hazards, Sawmill Workers

### 1. Introduction

Sawmilling involves cutting of logs into planks. Saw mill workers contribute tremendously to the socio-economic development of the nation; hence efforts should be made to ensure that this category of workers are in good health. This can only be done through studies conducted into the health problems of these workers. Sawmill business is a thriving

business in Nigeria because of the availability of timber as well as the current high demand for the product in the export market that has recently developed in the country. Exposure of sawmill workers to the wood aerosol thus constitutes a major occupational hazard facing the industry as chronic respiratory symptoms are quite common. According to Rastogi (1999) respiratory diseases resulting from prolonged exposure to wood dusts may be due to hypersensitivity reaction in addition to a non-specific toxic or mechanical irritant effects of the inhaled materials. Respiratory symptoms such as chronic cough, catarrh, breathlessness and wheeze are common among wood workers with a high prevalence in impairment of ventilator function influenced by degree of exposure to wood dust.

Occupational health researchers have long recognized that occupations of all descriptions are sources of wide range of hazards (Nwachukwu, 2000). This implies that certain diseases are associated with certain occupations. It is on this background that Million (2004) asserted that many lives have been lost, incapacitated or disfigured as a result of occupational hazards or due to the kind of work people do.

Man's occupation may influence his health. Seaton, Aguius, McCoy & Dauma (1994), affirmed that there is "something" about many occupations which causes an illness or adverse health effect peculiar to that trade, if this assertion is acceptable, it is therefore, logical to say that many workers are exposed to lots of hazards and risk at the workplace.

Most companies, factories or industries are associated with one or more occupational hazard(s) and a lot of factors can be contributory to this. The principal avenues through which these health hazards arise

have been categorized by Alwis, Hocking and Mandry (1999) into thermal conditions, biological and psychological factors. Others are exposures to electrical, chemical and particulate hazards (that is fumes, mists, gases, dusts and vapours) as well as exposure to physical and mechanical hazards. Sawmill industries are no exception to these wide range of health hazards.

Huff (2001) stated that workers in wood industries are exposed to variables medleys of chemicals both natural and synthetic. Additional exposures include fungi, bacteria, bark and wood dusts, solvents, paints and various other wood coatings. These individuals and conglomerate exposures have been associated with diverse occupational illnesses and hazards including cancer. Working in sawmill is one of the most dangerous occupation. The equipment poses numerous hazards such as falling, rolling, and/or sliding log can be dangerous. In support of this occupational safety and health administration Osha (2009) added that woodworking operations of a sawmill can be hazardous, particular when machines are used improperly or when working without proper safeguards. Woodworking employees often suffer from the injuries such laceration, amputations of several fingers and blindness. Wood dust and chemicals used for finishing products may cause skin and respiratory disease. therefore it is worthy to note that sawmill workers are exposed to various health problems ranging from skin cancer, waist pain, chest pain, lung cancer, running nose, blindness, deformation, pale finger, skin rashes, Hearing impairment /loss, chronic eye irritation and headache.

The sawmill industries have fairly large number of workers, majority of them are from the low-income group. The workers are subjected to rigorous work processes and long working hours. They are also exposed to hazards such as noise, air pollution, machine injuries, inhalation of wood dusts and toxic chemical from woods. These factors generate stress at workplace which may precipitate occupational diseases. The workers in most cases are left to take care of their health without the necessary support from their employers. It is also evident that the employers lay more emphasis on profit rather than the health of workers.

In a bid to maximize productivity, the workers function at the expenses of their health. Little or no attention is paid to their health. According to Salmon (2001) life is deprived not only of its usefulness, but also its joy and pleasure. Thus a worker whose health becomes affected in the course of carrying out his duty suffers the loss of joy and pleasure. Whereas

occupational health and safety legal documents provides recommendations for the provision of standard health care services, inspection and monitoring of the factories activities as enshrined in the Factory and Worker's Compensation Act. Albert (1994) who observed that there are several potentially toxic species of timber used in the sawmill industries. Some timbers have high silica content that can result in nasal irritation and some contain other chemical that can cause allergic reactions. In another development, international agency for research in cancer (IARC, 1998) stated that cut trees contain large amount of microbes, mainly moulds. The numbers of these increases in the logs are stored outside and under moist or humid conditions. According to Bean, Butcher and Lawrence (2006) negative health effects have been associated with professions that shape, cut or work with wood.

According to Bean et. al (2006) Where safety goggles are not adequate in quantity, workers are forced to saw wood without eyes protection. This will expose the eyes to different dangers such as eye irritation. This will subject the worker to nasal dryness and obstruction, prolonged cold, frequent headache, inflammatory changes in the lung (Dewer et al 2000), mucosal and non-allergic respiratory effect and sneezing sinusitis (Solgard & Anderson, 1995). Therefore the reports of Tescke et al (2000) and Salmon (2001) that most sawmill workers in Eastern Nigeria are without any safety equipment is corroborated by the findings of this study. Interestingly it was also found that hand gloves and safety clothing were adequately provided as both recorded 100% adequacy. This corresponds with the finding of Dewers et al (2000) that hand gloves and safety clothing are the commonest of all safety equipment in their study of availability of safety equipment among sawmill workers in Accra, Ghana.

Alwis et al (1999) investigated the adherence of sawmill workers to safety precautions among India worker and reported that the workers had positive attitudes towards safety precaution. In another study on occupational health hazards of sawmill workers Harrington and Gill (2001) reported that 76% of the respondent adhere to safety practices while 24% did not. The findings reported above by Harrington and Gill (2001) agrees with this present study which affirms a similar attitudinal disposition towards safety precautions. This findings however contravenes the finding of Solgard and Anderson (1995) who revealed negative attitudes towards safety regulations.

## 2. Research Questions

- What are the health problems confronting workers in sawmill in Benin Metropolis, Edo State.
- Do sawmill workers in Benin metropolis adhere to safety regulations?
- Are there safety equipment in the sawmill industry in Benin metropolis?

**3. Methodology**

The descriptive survey design was used in the study. This design was considered necessary because it explains the overall plan of data gathering. Owie (2006) opined that it provides appropriate methodology for investigating human behaviour and perception or opinion when the population under study is large. The design was chosen because it involves studying a group of people or items considered being representative of the entire population. It is concerned with the description of event as they are.

The population of this study comprised of all sawmill workers in Benin Metropolis. The total population of sawmill workers in the three local government areas in Benin metropolis was 299 (Edo State Ministry of Environment and Public Utilities, 2014).

A total of 100 sawmill workers constituted the sample for this study, representing 33.50% of the population. The stratified sampling technique was used to select sawmill workers. First, it involved stratifying Benin metropolis into three local government areas. Secondly, proportionate sampling technique was employed to select the sawmill workers in each Local Government Area. This involves picking number one (1) and every other third numbers in the list. This procedure was used to select 100 sawmill workers as the sample.

**4. Results**

**Research Question 1:** what are the health problems confronting workers in sawmill in Benin Metropolis, Edo State.

**Table 1:** Possible Health Problems Confronting Workers in Sawmill in Benin Metropolis.

1	Sawmill workers suffer respiratory problem	100	3.2300	.63333	Agree
2	Sawmill workers suffer deformations	100	2.2200	.89420	Disagree
3	Sawmill workers suffer from cuts	100	3.2400	.53409	Agree
4	Sawmill workers suffer from chest and waist pain	100	3.1900	.64659	Agree
5	Sawmill workers suffer from hearing impairment	100	3.1500	.71598	Agree
6	Sawmill workers suffer from tingling sensation	100	2.4900	.99995	Disagree
7	Sawmill workers suffer from skin rashes	100	3.0900	.63715	Agree
8	Sawmill workers suffer from headache	100	2.1200	.62410	Disagree
9.	Sawmill workers are prone to have cancer	100	2.9900	.70345	Agree

The research instrument that was used for this study is a questionnaire and observational checklist. The questionnaire was comprised of two sections: Section A and B. Section A dealt with the demographic data of the respondents while Section B elicited from respondents on occupational health hazards of sawmill workers. The observational checklist was used to check the necessary safety equipment that was available in the sawmills.

The instrument was content validated by three experts in the Department of Health, Safety and Environmental Education, Faculty of Education. Their criticisms, suggestions, corrections and recommendations served as the final draft of the instrument.

The test-retest method of determining reliability of an instrument was used. This involved administering the instrument to twenty (20) respondents that were not part of the study but they are sawmill workers. After an interval of two weeks, the same test was administered to the same group of workers in which Pearson Product Moment of Correlation co-efficient was used to establish its reliability and a reliability of 0.73 were obtained.

A letter of introduction was obtained from the department which was presented to the head of the unit of every sawmill visited. Thereafter the instrument was distributed by the researcher alongside with trained research assistant. Pidgin or mother's tongue was used where necessary. Ample time was given to the respondents to enable them respond to the items in the questionnaire, after completion, the questionnaire were retrieved.

Regarding the statistical analysis, the descriptive statistics of frequency counts and percentages was used.

In item 1, data shows a mean of 3.2300 and a standard deviation of .63333, it therefore suggested that the respondents agreed that sawmill workers suffer respiratory problems using a criterion mean of 2.50. In item 2, shows a mean of 2.2200 and a standard deviation of .894200. It implies that the respondents disagreed that sawmill workers does not suffer deformations. In item 3, show a mean of 3.2400 and a standard deviation of .53409, it indicated that the respondents agreed that sawmill workers suffer from cuts. In item 4, shows a mean of 3.1900 and a standard deviation of .64659. it means that the respondents agreed that sawmill workers suffer from chest and waist pain. In item 5, shows a mean of 3.1500 and a standard deviation of .71598 which means that the respondents agreed that sawmill workers are prone to hearing impairment based on the criterion mean of 2.50. In item 6, shows a mean of 2.4900 and a standard deviation of .99995. It indicated that the respondents disagreed that, sawmill workers do not suffer from tingling sensation, based on the criterion mean of 2.50. In item 7, shows a mean of 3.0900 and a standard deviation of .63715. It therefore means that the respondents agreed that sawmill workers suffer from skin rashes, based on the criterion mean of 2.50. In item 8, shows a mean of 2.12 and a standard deviation of .62410. it therefore means that the respondents disagreed that sawmill workers do not suffer from headache. In item 9, shows a mean of 2.9900 and a standard deviation of .70345. it therefore suggested that the respondents agreed that sawmill workers are prone to lung cancer, based on the criterion mean of 2.50. In item

**Research Question 2:** Are there safety equipment in sawmill industry in Benin metropolis

**Table 2:** Availability of Safety Equipment in Sawmill Industry in Benin Metropolis

S/N	Item	Not available	Percentage	Available	Percentage	Total	Total %
1.	Safety gadgets	6	46.2%	7	53.8%	13	100%
2.	Safety boots	7	53.8%	6	46.2%	13	100%
3.	Helmet	13	100%	-	-	13	100%
4.	Ear muff	5	38.5%	8	61.5	13	100%
5.	Hand gloves	-	-	13	100%	13	100%
6.	Nose mask	1	7.7%	12	92.3%	13	100%
7.	Safety clothing	-	-	13	100%	13	100%

Data in table 2, shows that, 46.2% of the sawmill visited using a checklist revealed that no safety goggles’ were not available while 53.8% shows that safety all safety goggles’ are available. In item 2, it shows 53.8% of the sawmill industry in Benin metropolis that safety boots are not available while 46.2% of safety boots are available. In item 3, a look at the table shows that 100% of the sawmill in Benin city revealed that helmet is not available. In item 4, in the table above indicated that 38.5% of the sawmill industry in Benin metropolis that ear muff are not available while 61.5% revealed that it is available. In item 5, data shows that, all the thirteen (13) sawmill in Benin had hand gloves representing 100%. In item 6, data shows 7.7% of the sawmill do not have nose mask while 92.3% shows that nose mask are available. In item 7, data on the table shows that all the thirteen sawmill sampled in Benin metropolis revealed safety clothing was 100% available.

**Research Question 3:** Do sawmill workers in Benin Metropolis adhere to safety regulations?

**Table 3:** Adherence of Sawmill Workers To Safety Regulations in Benin Metropolis

Variable	N	Mean	Standard deviation	Decision
Adhere to safety rules and regulations	100	13.8500	2.64527	Sawmill workers adhere to safety regulations

Data in table 4 shows that the mean score of the respondents to be 13.8500 and a standard deviation of 2.64527 with a criterion mean of 12.50. It indicated that sawmill workers adhere to safety rules and regulations

**5. Discussion of Findings**

The findings from this study were discussed under the following:

**5.1 What are the possible health hazards confronting workers in sawmill in Benin Metropolis?**

Table 1, revealed that sawmill workers are greatly exposed to one health problems or the other. This

problem could be as a result of nonchalant attitude of the workers by not using proper gadgets to safeguard themselves against these health problems. This study agrees with Albert (1994) who observed that there are several potentially toxic species of timber used in the sawmill industries. Some timbers have high silica content that can result in nasal irritation and some contain other chemical that can cause allergic reactions. In another development, international agency for research in cancer (IARC, 1998) stated that cut trees contain large amount of microbes,

mainly moulds. The numbers of these increases in the logs are stored outside and under moist or humid conditions. The microbes can cause inflammation of the airways during, debarking, sawing and transportation. According to Bean, Butcher and Lawrence (2006) negative health effects have been associated with professions that shape, cut or work with wood. Wood dust becomes potentially hazardous to health when the wood particles from processes such as sawing, shaping or cutting becomes airborne and the particles may cause external and internal health problems such as dermatitis allergic, respiratory effects, mucosa non-allergic respiratory effects and cancer, other common negative health effect associated with wood dust expose include eye irritation, nasal dryness and obstruction, prolonged colds and frequent headaches.

## 5.2 Safety Equipment in Sawmill in Benin Metropolis

Data in table 2, revealed that there are inadequate safety equipment in sawmill in Benin metropolis. When each of the equipment was isolated for study, the state of inadequacy of the available equipment became glaring. For instance it was found that of the 13 safety goggles' required in the sawmill studied, only 7(53.8%) were available which showed inadequate supply. This implied that additional 6 goggles are required. Where safety goggles are not adequate in quantity, workers are forced to saw wood without eyes protection. This will expose the eyes to different dangers such as eye irritation (Bean et al, 2006). This findings widespread shortage of safety goggles in the study of 15 privately owned sawmill industries in southwest Nigeria of the 13 safety boot required in the sawmill studied, only 6 (46.2) were available indicating level of inadequacy. This discovery contravenes the finding of Kawachi (2007) that safety boots are widely available for sawmill workers in New south wale, Australia. A very vital equipment used by sawmill workers helmet nose mask and ear muff, but it was found that these equipment were neglected in many sawmill as only 0%, 61.5% and 92.3% for helmet, ear muff and nose mask were available respectively. This will subject the worker to nasal dryness and obstruction, prolonged cold, frequent headache, inflammatory changes in the lung (Dewer et al 2000), mucosal and non-allergic respiratory effect and sneezing sinusitis (Solgard & Anderson, 1995). Therefore the reports of Tescke et al (2000) and Salmon (2001) that most sawmill workers in Eastern Nigeria are without any safety equipment is corroborated by the findings of this study. Interestingly it was also found that hand gloves and safety clothing were adequately provided

as both recorded 100% adequacy. This corresponds with the finding of Dewers et al (2000) that hand gloves and safety clothing are the commonest of all safety equipment in their study of availability of safety equipment among sawmill workers in Accra, Ghana.

## 5.3 Adherence to Safety Equipment in Sawmill in Benin Metropolis

Similarly, it was discovered from the finding that sawmill workers in Benin metropolis adhere to safety regulations. This was based on mean score of 13.85 as against the criterion mean of 12.50. the finding corroborates with the findings of Alvis et al (1999) which investigated the adherence of sawmill workers to safety precautions among India worker and reported that the workers had positive attitudes towards safety precaution. In another study on occupational health hazards of sawmill workers Harrington and Gill (2001) reported that 76% of the respondent adhere to safety practices while 24% did not. The findings reported above by Harrington and Gill (2001) agrees with this present study which affirms a similar attitudinal disposition towards safety precautions. This findings however contravenes the finding of Solgard and Anderson (1995) who revealed negative attitudes towards safety regulations.

## 6. Conclusion

Based on the findings of the study, it could be concluded that the results of the study revealed that Sawmill workers are confronted with numerous health hazards associated with sawmilling, that there are inadequate safety equipment in the sawmill and that sawmill workers adheres to safety rules.

## 7. Recommendations

Based on the result of this study, the following recommendations were made:

- Adherence to safety rules should be sustained by rewarding law abiding workers and punishing culprits. This will help sawmill workers to be dedicated to their duty and attain a better height in safety consciousness.
- Since many of the personal protective equipment are not adequate, sawmill owners should as a matter of urgency provide the unavailable equipment to ensure that they are adequate in quality and quantity.

- The government should constitute a special task force that will monitor the operations of sawmilling in Benin metropolis with the view to ensuring strict compliance to safety practice

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