

e-ISSN:2582-7219



INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

Volume 7, Issue 6, June 2024



6381 907 438

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

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Impact Factor: 7.521

| ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521 | Monthly Peer Reviewed & Referred Journal |



Volume 7, Issue 6, June 2024

| DOI:10.15680/LJMRSET.2024.0706001 |

Assessment of Wood Based Industries and Their Waste Disposal Methods – A Case Study of Wizzy Star Company, Umuahia Abia State

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ABSTRACT: This study was carried out to examine the waste disposal methods of Wizzy-Star Company, Umuahia, Abia State, Nigeria. Samples of forty (40) respondents were randomly selected among

the Staff and customers of Wizzy-Star Company; twenty purposive sampling techniques and twenty (20) semistructured questionnaire was distributed to the respondents. Information obtained from the questionnaire includes the various wood by-products produced in the wood industry, the various waste management method, level of awareness of the companies impact on the environment etc.

Wastes are disposed off majorly by open dumping, open burning, domestic usage, bedding for poultry and for landfill. Although most of the workers are aware of the guidelines and regulations governing the treatment and disposal of sawmill wastes, they hardly abide by them.

The personnel who are assigned to sanitize the environment possess inadequate safety wares. The study also revealed that Environmental Protection Agency/Sanitary Inspectors and the Development control Board in the city inadequately perform their duties. This paper also highlighted the need to enlighten the public, wood based industries and the government on the dangers of indiscriminate disposal of wood wastes.

The data obtained was analyzed using descriptive statistical analysis which includes frequencies

and percentages and represented in figures. From the result obtained, majority of the respondents

indicated that disposal and landfilling is the best method of waste management.

KEYWORDS: disposal method, waste management, wood by-products, landfilling

I. INTRODUCTION

Wood waste generation in Nigeria is constantly increasing due to factors such as low average timber recovery both in the forest and wood processing industries (Akhator et al., 2017). The activities at forests, wooded lands, and wood processing industries generate a huge volume of wood wastes that could be harnessed to produce value added products. Due to poor management methods, these vast amounts of wood residues are often discarded as useless materials, usually untreated, into the environment where they cause adverse effects. Disposal methods such as heaping at industrial sites, dumping on roadsides, drainages or water bodies and open-air burning are common practices. The residues are often dump into rivers by wood industries that are situated close to river banks. These indiscriminate disposal practices result in untold environmental and human impacts; unsightly look of the environment, air pollution, respiratory tract infection, eye problems, contamination of rivers and ground waters, also it results to the distortion of water ecosystems and climate change (Arimoro et al., 2007; Nwankwo, 1998; Wihersaari, 2005).

These wood wastes disposal practices contradict sustainable solid waste management which entails various activities that encourage the efficient utilization of material resources to reduce the amount of waste produced and the management of waste generated in such a way that the economic, social and environmental goals of sustainable development are largely achieved (Pianosi, 2012).

The open dump method of solid waste disposal is considered as both naive and dangerous (Rushbrook and Pugh, 1999). This is because there is no control on the leachate (the contaminated liquid draining from waste) generated and constitutes a direct risk to human health. Though, open dump is initially thought to be cheap and easy it is in the long run the costliest (Eerd, 1997). Johnnessen and Boyer (1999) observed that it remains the predominant means in developing countries. There is consequently the need for Environmental Education (EE) for wood based industries

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workers to evolve an environmentally friendly disposal practice. Schaefer (1980) sees EE as a learning process through which the people's knowledge and awareness about the environment and associated challenges are increased. It is also the means through which necessary skills and expertise to address the challenges are developed. It is aimed at fostering attitudes, motivations and commitments to make informed decisions and take responsible actions. This erudition progression and awareness strategies will help improve wood based industries workers attitudes, motivations and commitments towards appropriate disposal and management of wood waste. Pulp and paper products have been the largest forest products imported into Nigeria. For many years, the need for the development of pulp and paper production capacities in developing countries were of limited interest as a result of the stability experienced in the global pulp and paper market (Picornelli, 1984).

However, as the demand for paper and for paper material rises, the market in Nigeria would continue to grow, as in the case of soft tissue paper popularly known as 'toilet roll' in Nigeria. These paper products have been classified among the most profitable and fast-selling items in the country (Ibrahim, *et al.*, 2015). The paper variant is used in personal cleansing, sanitation, and hygiene, and is frequently demanded by offices, schools, hotels, restaurants, households, etc. as it comes in various forms such as serviettes, face towels, and kitchen towels. Demand and consumption for toilet rolls are likely to be aggravated by demography which revealed that more than half of the Nigerian population falls within the active age group (15–34 years); the majority of which are simultaneously categorized within the middle class (NPC & ICF, 2013). These two classes of consumer populations are tied to high demand for hygiene and sanitation (Ibrahim, *et al.*, 2015; NPC & ICF, 2013). It is therefore expedient to access the waste disposal methods employed by wood based industries.

II. MATERIALS AND METHODS

A reconnaissance survey was carried out to identify the number of staff working in Wizzy Star Company and also to identify their methods of waste disposal.

A purposive sampling technique was employed during the selection of respondents which included both staff and customers present during visitations. Twenty respondents was selected using a purposive sampling technique and twenty (20) semi-structured questionnaires was distributed to the respondents i.e. a copy for each respondent.

Data Analysis

The information obtained from the questionnaires was subjected to descriptive statistical analysis which includes; tables, charts, mean, standard deviation, percentages etc.

III. RESULTS AND DISCUSSION

Socio-economic characteristics of respondents in Wizzy-star Company Umuahia.

The demographic data collected from Wizzy Star Company Umuahia revealed that there are nine males and eleven females in the management cadre. This result shows that there are more women involved in the wood-based company than men and this result is at variance with the study conducted by (Ajayi and Ojutiku, 2008) which reported that men are mostly saddled with strenuous activities involving heavy objects such as moving of planks, sawing and wood planning characterizing furniture making and the traditional role of women in Nigeria has been described to include training of children, household care and petty trading to augment family income.

The age range of the majority of the Wizzy Star management staff falls within 25-35 years, followed by 36-45 while individuals within 18-25 years age range were the least in the management cadre (Fig 1). Among the management cadre, 52.63% were married while 47.37% were single and this result agrees with the study conducted by (Holzer, 1988). Stating that the high profit margin in wood-based enterprise may have been the motivational factor sustaining the business and their households for years. Higher experience and length of training mostly results in better skills on the job and better chances of higher returns on investment,

Among the Wizzy Star staff, 45% have attended Tertiary institution as their highest level of education, 35% have attended Secondary School while 20% only attended Primary School as their highest level of education; Good education level is important for skill and technology acquisition as well as capacity building. Proper record and book keeping require some degree of literacy which is necessary to monitor the progress of the enterprise. This supports the view of Ajayi and Ojutiku (2008) who stated that reasonable literacy level will aid technology acquisition demonstrated by extension agents and management staffs of wood-based enterprise.

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Fig 1: Socio-economic characteristics of respondents in Wizzy-star Company Umuahia



Fig 2: Differences in the education level of Wizzy Management staff

Methods of Waste Disposal in Wizzy-Star Company Limited

Wizzy Star Company was established in 2016 and became operational the same year. The pulp is the primary raw material utilised in the Wizzy Star Company. At least 80% of the pulp used as raw material at Wizzy Star Company is from recycled paper material. The primary product of the company is tissue paper. Wizzy Star Company prefers to use softwood for the production of pulp which they use in the manufacture of tissue papers.

it was observed that waste disposal remains one of the biggest challenges facing the company as there are no training programmes for workers on waste management and as a result, safety wares such as nose guide and safety glasses are not worn always, even when they are aware of the need to do so (Table 1). Wizzy Star Company is not complying with the guidelines for the disposal and treatment of wood waste. This may be due to the fact that the government agencies charged with the responsibilities of enforcing laws governing the disposal and treatment of sawmill waste have not been active. For instance, it was gathered that sanitary inspectors and Environmental Regulatory agencies do not visit the company at all. This is why the Nigeria Environmental Study/Action Team, NEST (1991) put it that Laws and legislations are often set in Nigeria but enforcement of the laws becomes difficult. Authorities and workers of the company point out that, there is a need for seminars and workshops that will help them to manage properly the wastes they generate. They also suggested that researches should be undertaken by higher institutions and research bodies in the country on handling and recycling of wood waste locally.

It was observed from this research work shows that burning of wood waste by Wizzy-star paper mill industry is the least method of waste disposal because of the various health risk associated with it (Fig. 3) and this result supports the study by (Dosunmu & Ajayi, 2002, Aina, 2006; Aiyeloja et al., 2013) who said that burning of wood wastes constitutes environmental pollution. Waste generation is a concomitant aspect of living; it cannot be banished but can only be managed; another method of wood waste management is through disposal; wood waste disposal ranked the highest method of wood waste management in the study and it corroborates with the findings that disposal of solid waste is the ultimate step in a management system. In advanced technologies, disposal is preceded by some engineering activities such as sorting and quantity reduction (White *et al.*, 1997). This is done in order to sort out materials that can be turned into some economic value. Several method of disposal waste exists. The choice of any method depends on a number of factors. These factors according to Eerd (1997) include: characteristics of the solid waste to be disposed, cost

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consideration (i.e. how much is available and how much the method could cost), availability of disposal site (cost of land for example) and cost of labor and technical implication of the methods. Recycling and reusing of wood wastes was another method of wood waste management from the study as it supports the research finding that mixtures of manure and ashes from burning of urban solid wastes have been used for soil amelioration to boost agricultural productions in Jos (Pasquini and Alexander, 2003).

In summary; this result shows that waste management in the company were mainly through disposal, through recycling and occasionally they do burn their wood wastes. Wood wastes generated at the company that were not recycled within the company or burnt are usually disposed mostly at landfills, refuse dump sites and other recycling plants (Fig. 3).



Fig 3: Methods of wood waste management methods in Wizzy Star Company

Table 1: Level of Awareness of Guidelines and Training of Personnel

Parameters	Number of Workers
a. Awareness of Guidelines	
i. Aware	4
ii. Not Aware	14
iii. Not Specified	0
b.Training in Waste	
i Troin Dersonnal	0
I. Irain Personnel	4
II. Do not train personnel	
c. Use of Safety Wares	
i. Always	0
ii. Sometimes	9
iii. Not specified	0

Source: Authors' field work (2021)

IV. CONCLUSION

In Nigeria, like most developing nations proper waste management practices are lacking. Wood waste from sawmills, furniture industries and plywood industries are disposed off in a crude manner, which in most cases is either by burning or dumping in open areas which pose environmental hazards. Waste if properly managed will improve the quality of our environment, as it will reduce the amount of trees being cut and forests being lost due to the high demand/use of timber and its derived products, carbon IV oxide (CO2), sulphur IV oxide (SO2) emitted during burning of waste wood can be reduced to the minimum if waste wood is reduced landfill spaces can be saved as a result of reuse of waste

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wood, create wealth and employment. Effects of improper management of wood waste are economic loss, environmental pollution, fire hazard, delay of work and harbouring of dangerous pests and vectors.

Recommendation

The Nigerian public should be made aware of the rapidly deteriorating forests and the consequences of this. The benefits of reuse/recycling of waste wood should be made public and encouraged as a source of wealth for small and medium sized industries. Nigeria as a developing country can benefit from this in terms of economic growth and forest resuscitation as more products can be made from this waste wood. This will also reduce the emission of pollutants (carbon II oxide and sulphur IV oxide) in to the environment; it will reduce the damage on the environment. Adequate information on the economic returns of using wood by-products should be provided to the general public. Effective enforcement of environmental regulations concerning disposal of wood by-products within and outside sawmill premises.

Encourage the use of advance wood machineries so as to reduce the amount of wood by-products generated during wood harvesting and processing.

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| ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521 | Monthly Peer Reviewed & Referred Journal |



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