
FROM WASTE TO WEALTH: HARNESSING WOOD WASTE FOR HEALTH, ECONOMY, AND SOCIETY

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Abstract

The issue to avoid in the process of manufacturing goods from wood-based materials is the waste. Bark, small-sized cuts, sawdust and shavings from sawing and cutting, as well as dust, are the main waste products of the wood industry. Losses can occur when waste is left unmanaged and not properly handled. According to OSHA (Occupational Safety and Health Administration) standards also state that respiratory disorders, digestive issues, dermatitis, cancer, and other health problems are caused by wood dust waste. Besides physical harm, the negative impact of wood waste on health includes decreased performance in carrying out work tasks. The problems from handling wood waste are leaving it decompose, stacking, or burning. The losses incurred from such actions can manifest as degraded soil quality and air pollution. Furthermore, flooding becomes an issue during the rainy season due to drainage systems being blocked by wood waste. The generated waste should not be simply piled up but rather sorted for recycling. From an economic perspective, recycling the generated waste can provide significant benefits. Wood that is no longer used but still in good condition can be repurposed in various ways. Through recycling efforts, the community can participate in managing wood waste. Job opportunities can also be created from this enthusiasm. Wood waste, which was previously categorized as difficult to handle, can now be addressed. This solution can give positive impact to economic and social aspects. Most importantly, it addresses health and environmental concerns.

Keywords: Health, Industry, Management, Waste, Wood.

INTRODUCTION

The World Health Organization (WHO) states that approximately 2 million people worldwide are estimated to be exposed to wood dust while working. According to the Occupational Safety and Health Administration (OSHA) standards, wood dust can lead to various health issues, including digestive disorders, respiratory problems, cancer, dermatitis, and more. In addition to physical health conditions, a decline in an individual's work performance is also a significant drawback caused by wood industry waste. The daily lives of people living in close proximity to this waste certainly pose a problem. From health, economic, and environmental perspectives, the negative impacts can affect all three aspects. Wood industry waste that is piled up and allowed to decompose or is burned can lead to soil degradation and air pollution. When accumulation occurs in drainage systems, flooding can also result. Upon further investigation, wood industry waste can be repurposed by recycling usable wood remnants. This recycling process can yield significant economic benefits. Recycled waste will not pose health risks and can create job opportunities for the local community without burdening the environment. What was once a challenging issue related to wood waste has now become a benefit across various aspects. The problem statement of this journal writing is to clarify the dangers of wood industry waste to the environment, health, and economy. The purpose of this writing is to review research related to wood industry waste management, so that what was once a problem can now become an effort that brings positive impacts

LITERATURE REVIEW

Definition of wood waste

Wood waste consists of leftover pieces of wood from furniture that are no longer used, whether in usable condition or not. Wood waste can include shavings, sawdust, and remnants from sawing (Hartanto, 2022)

Impact of wood waste (Environment, Health, and Economy)

The burning of wood waste causes air pollution and poses significant problems for the environment and surrounding communities (BINUS University 2020). Lisdiani, (n.d.) states that wood waste dumped into rivers and piled in surrounding areas leads to the narrowing of waterways and deteriorates river water quality. Furthermore, the WHO and OSHA report that 2 million people are exposed to wood dust, resulting in several serious illnesses. The International Agency for Research on Cancer (IARC) reported that wood dust can cause cancer and classified it as a Group 1 carcinogen for humans in 1995. Additionally, unprocessed wood waste can lead to economic losses (Febriana Tri Wulandari, 2019). Usable wood that is no longer needed is often discarded and left to rot.

Recycling

A furniture company inevitably produces waste from its manufactured products, and this becomes a significant issue if not addressed (Prasetya Ilham, Ebri Rama 2014 in Wardana, 2018). The generated waste is far from being beneficially recycled; most of it is simply piled up until it decays without further processing. According to Tony Hare (1995) in Novarini *et al.* (2023), recycling is the process of recovering waste or materials that are no longer useful, utilizing all or part of a material. Recycling is an appropriate solution to the problem of wastefulness regarding the raw material supply from the earth.

RESEARCH METHOD

This journal is based on qualitative research. According to Denzin and Lincoln (1994), qualitative research is a method conducted in a scientific setting to explain phenomena as they occur. This approach is utilized to analyze the impacts and benefits of wood industry waste. The study references several previous research journals, covering a time frame starting from the end of November 2024. The research relies on secondary data, which includes information sourced from existing materials such as books, journals, reports, and other significant documents. Additionally, it incorporates a literature study by collecting data from written sources such as books, journals, and reports relevant to the research topic. The analytical literature process involves several stages, including data collection, data analysis, and the development of a foundational framework.

RESULTS AND DISCUSSION

The wood industry generates waste in the form of wood scraps, sawdust, and shavings, which are often considered worthless and rarely reused. A significant amount of waste is piled up, discarded into rivers, and even burned indiscriminately. This poses environmental problems and causes discomfort for the surrounding community (Hartanto, 2022). The advancement of industries

still has negative impacts. Wood industries, for example, have the potential to cause and expose contamination to the air through wood dust (Dyan Rezki Devi Chaeruddin et al., 2021). Every job has its own hazards, whether temporary or long-term. In this case, Occupational Lung Disease (OLD) is a serious health condition caused by exposure to dust, smoke, or gases affecting workers and anyone present in a specific location for an extended duration.

The International Labour Organization defines pneumoconiosis as a disorder resulting from the accumulation of dust in the lungs. In addition to health issues, the environment is the second aspect that suffers negative impacts from industrial wood waste. Waste from the wood industry that is directly disposed of on the ground can contaminate it, reducing soil quality so that land that was once suitable for agriculture no longer retains the same quality. Furthermore, beyond these two aspects, wood industry waste negatively affects economic aspects. When waste from the wood industry is discarded while still in usable condition (occurring because the waste consists of cutting remnants), items that could have been resold simply rot away. In today's modern era, many innovations are being developed to address waste from the wood industry. Some of these innovations include fertilizer production (Manu et al., 2023), briquette production (Ali et al., 2024), and more. Based on these innovations, waste that was once a problem can be transformed into something useful.

When these innovations are developed, positive outcomes can be achieved in terms of environmental health and economic aspects. For example, fertilizer production can enrich the surrounding soil, thereby improving its quality for everyday use as farmland. From a health perspective, exposure to dust and other wood scraps can be reduced during daily production processes, lowering dust exposure levels and consequently reducing disease incidence. Lastly, these innovations can create job opportunities in their development. Local communities wishing to manage waste can take on beneficial roles for both owners and society at large.

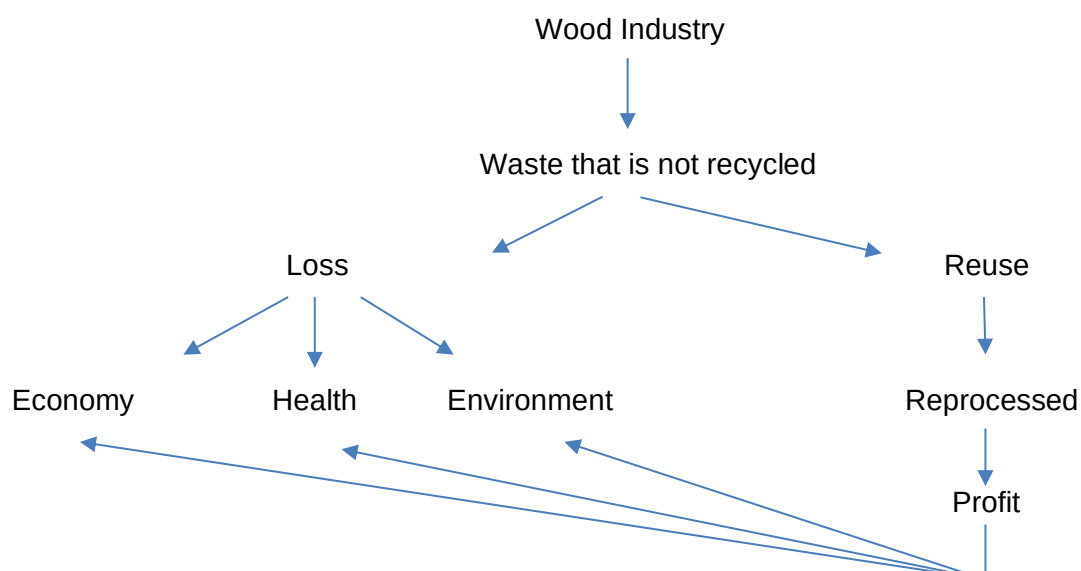


Figure1. The wood industry

CONCLUSION

The issue of waste from the wood industry is indeed not unfamiliar and may seem trivial. However, in everyday contexts, each part of that waste brings negative impacts. Losses, decreased

physical strength, and environmental damage are tangible evidence of this seemingly trivial problem. In the development of the wood industry, there should be a clear waste management process. If the waste can no longer be utilized, there must still be a defined procedure for its disposal. An industry should have this in place. Opening an industry, especially in wood, is not just about seeking profit and then carelessly discarding waste; it is about how to manage what happens after the activities in that industry have concluded and will transition to other work. In today's era, advancements in technology and human intelligence should be accompanied by noble goals. Waste is not a problem to be ignored but rather a challenge to be addressed.

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