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Original Article

Household Solid Waste Management in Communities Living in Plantation Areas

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ABSTRACT

Background: The cause of the lack of waste management in the community in the plantation area is the lack of sanitation facilities in the community. environmental health risks are associated with households that do not utilize waste services or possess trash bins. This study aims to determine the condition of household solid waste processing in the community in the plantation area in Banjarsari Village, Bangsalsari District, Jember Regency.

Methods: The research design employed is descriptive research. Descriptive research methods are employed to address issue formulations in research concerning the treatment of household solid waste.

Results: The result of this study shows that 94.12% or 32 respondents who have their own trash cans and the rest do not have trash cans. For 2 respondents with a percentage of 5.88% do not have their own trash cans. All respondents processed waste by burning, namely 34 (100%) respondents. There are no TPS in the plantation area

Conclusions: The Banjarsari plantation does not have a temporary Waste Storage (TWS), resulting in the community processing waste by burning. Processing waste by burning can have negative effects on the environment and health

Keywords: *Household, Solid Waste, Waste Management, Plantation area*

INTRODUCTION

A persistent challenge in numerous communities pertains to the management and ownership of refuse collection infrastructure. According to recent projections, Indonesia's waste generation is expected to reach 43 million tons per year by 2023, with only 59.9% of this waste, equivalent to approximately 25.78 million tons per year, being processed [1]. East Java Province has a substantial waste generation rate of 12.8 million tons per year. It has been determined that Jember Regency is among the districts that generate a high volume of waste, ranking as the second largest producer after the city of Surabaya. A review of data from the Ministry of Environment and Forestry (KLHK) reveals that the Jember district generates approximately 754.6 thousand tons of waste annually, yet the waste that is currently managed is merely about 197.4 thousand tons per day. This shows that there is still much waste that has not been managed and tends to pollute the environment, so it can become a big problem if not handled properly [2,3].

The predominant occupations in the Jember district are those of fishermen and garden farmers. Typically, garden farmers have their place of residence in the plantation area where they work. One of the plantations in Jember district is the Banjarsari plantation, which is located in the Bangsalsari sub-district. Preliminary studies have indicated that the quality of waste management in the Banjarsari plantation area is inadequate. A salient issue is the prevalence of open dumping disposal of refuse, primarily through burning waste in residential backyards.

The cause of the lack of waste management in the community in the plantation area is the lack of sanitation facilities in the community like don't have a temporary waste storage. The availability of sanitation facilities in communities living in plantation areas is still unsatisfactory, especially solid waste disposal facilities [4]. A study of the plantation area reveals that the current state of waste disposal does not meet the established requirements [5]. It has been demonstrated in other studies that environmental health risks are associated with households that do not utilize waste services or possess trash bins. Consequently, these households dispose of their waste directly into the environment [6].

A house suitable for use as a place to live must meet several health requirements so that its occupants can avoid getting sick and become more comfortable. [7]. Healthy homes have several requirements that need to be met, especially to prevent the spread of disease. These requirements include the availability of clean water, the presence of trash cans and latrines in the house, there are no nests for vectors or rodents and the rooms must be separated in sufficient numbers to avoid contact with infectious diseases [7]. From another research shows that temporary waste storage condition have relationship with density of rats in around the residential [8]. So it is necessary to have own trash can at home, where ownership of trash cans in the household can also be related to the incidence of stunting in the community [9]. Therefore, it is important to have a trash can at home and a temporary waste storage facility to manage a household solid waste.

This study aims to determine the condition of household solid waste management in the community in the plantation area in Banjarsari Village, Bangsalsari District, Jember Regency.

METHODS

The research design employed is descriptive research. Descriptive research design is a research design carried out with the primary objective of objectively depicting or describing a given situation [10]. Descriptive research methods are employed to address issue formulations in research concerning the treatment of household solid waste.

The population of this study was comprised of the heads of households or other family members residing in the Banjarsari plantation area, situated in Bangsalsari District, Jember Regency, amounting to a total of 83 households. The population is composed of local residents who are employed in the plantation. The sample in this study was a portion of the houses located around the plantation area of Banjarsari, Bangsalsari District, Jember Regency, which amounted to 34 houses. In the process of acquiring samples, researchers employed a simple random sampling technique.

The data obtained from these sources is derived from field information. In this research, field information was obtained from the community surrounding the Banjarsari plantation area, which is located in Bangsalsari District, Jember Regency. This source of information was obtained using interview techniques and direct observation of the community surrounding the plantation.

The instruments employed in this study included individual questionnaires and observation sheets, which were utilized to implement interview methods and conduct direct observation of the facilities and infrastructure owned by the research sample.

RESULTS

a. Overview of the Research Location

This research was conducted on October 20-22, 2018, located in the Banjarsari plantation area, Bangsalsari District, Jember Regency, with 34 respondents interviewed.

b. Trash can ownership

The distribution of respondents based on the ownership of trash bins from 34 respondents in the plantation area community can be seen in the table 1.

Table 1 Ownership of Trash Bin

Ownership of Trash bin	Total	Percentage
Yes	32	94,12%
No	2	5.88%
TOTAL	**34**	**100%**

Based on table 1. it can be concluded that the majority of respondents have their own trash cans, namely 94.12% or 32 respondents who have their own trash cans and the rest do not have trash cans. For 2 respondents with a percentage of 5.88% do not have their own trash cans, but use plastic bags as waste collection containers before being disposed of in the backyard of the house.

c. Type of garbage bin

The distribution of respondents based on the type of trash can from 34 respondents in the community in the plantation area can be seen in Table 2.

Table 2 Type of Trash bin

Type of Trash bin	Total	Percentage
Bak semen	1	3,1%
Plastic bin	26	81,3%
Bamboo Basket	0	0
Plastic bag	5	15,6%
TOTAL	**32**	**100%**

Based on table 2. it is known that of the 32 respondents who have a trash can, 26 respondents have a type of trash can in the form of a plastic tub with a percentage of 81.3%, 5 respondents use a type of plastic bag trash can with a percentage of 15.6%, and 1 other respondent uses a type of cement bin with a percentage of 3.1%.

Figure 1 Trash can condition

d. Waste Management

The distribution of waste management usually carried out by respondents in the plantation community, showed that all respondents processed waste by burning, namely 34 (100%) respondents. Waste burning is done in an open yard behind the house. Burning waste is done by making a puddle first then the garbage is collected in the puddle and then burned. Most of the households living in the plantation area burn their waste openly in the backyard because there is no TPS to accommodate their waste.

Figure 2 A pit for burning garbage

e. Temporary Waste Storage

Based on the results of observations and interviews with people living in the plantation area, it shows that there is no TPS in the plantation area. TPS is very important to have in any area because it is a temporary waste storage place before the waste is taken to the final disposal site (TPA). The TPS can also be a place where waste processing such as 3R sorting can be carried out so that the amount of waste sent to landfills can be minimized and the economy of the local community can be revived..

DISCUSSION

The plantation area is a residential location for people who work on the plantation. One of the problems that exist in the plantation area is waste management. Waste management is still a problem that still occurs in Indonesia. Poor waste management in various regions in Indonesia can cause other problems such as the environment and public health. In the waste management process, the problem of containers plays a very important role. Therefore, the trash bin is the responsibility of the individual who produces the waste (the source of the waste), so each source of waste should have its own container/trash bin [11]. A waste container is a way for individuals or sources of waste to collect their waste personally before it is finally collected, moved and transported to the final waste disposal site [12].

Based on the results of the research conducted, it shows that most people in the plantation area have trash cans. Where out of 3 households there are 32 households that have their own trash cans in their homes and the rest do not have trash cans. One of the components in the assessment of a healthy home is the existence of a trash can at home and disposal of garbage in the trash can. [7]. Based on the results of previous studies have shown that the presence of trash bins at home has a significant relationship to the incidence of typhoid fever. [13]. Other studies have also shown that waste ownership has a significant association with the incidence of diarrhea. Other studies have also shown that waste ownership has a significant association with the incidence of diarrhea. [14]. Therefore, the ownership of waste bins is quite important because it has a relationship with public health issues.

In order for waste management to run well, waste must be disposed of in a trash bin that facilitates the waste disposal process. One way to do this is by using the right trash bin and according to the type of waste. The container used as a trash bin must meet certain criteria, including being easy to clean, not easily damaged, tightly closed, and placed outside the house [12]. In this study, the types of waste owned by the community are quite diverse. The type of garbage bins most widely owned by the community is the type of plastic tub garbage. In this study, 81.3% of people had plastic bins. Figure 1. shows that community-owned bins in the plantation area are not closed or left open. This has the potential to become a refuge for vectors or rodents. Based on the results of the research conducted, it shows that there is a relationship between the condition of community bins and the density of house flies (musca domestica) [15], in addition, the presence of inadequate trash cans can affect the incidence of leptospirosis caused by rats. [16].

In this study, people living in the plantation area managed their household waste by burning it in the backyard of their house. Based on the results of interviews and observations conducted, it shows that all respondents manage their waste by burning it openly. Residents burn or dump waste near their

homes due to the lack of proper waste management alternatives and inadequate waste collection systems. In addition, economic constraints to pay for transportation services and a lack of information about waste production lead to poor household waste management [17,18]. In developing countries, the most common and least expensive method of waste management is the incineration of waste on a small scale or its disposal in landfills [19]. Open burning is a poor waste management practice in managing household waste. [20]. Incineration, converting waste into gas so that its volume can be reduced by 90-95%, is an effective technique but is not recommended because it has the potential to cause air pollution [11]. Based on bibliometric analysis shows that researchers are concern about the environmental and health risk of open burning due to their potential hazard emissions [20]. So that waste management by burning has the potential to cause environmental damage and health effects.

Open burning of waste can cause short-lived climate pollutants (SLCPS) such as methane and carbon, particulate matter, and persistent organic pollutants such as furans and dioxins and polychlorinated aromatic hydrocarbons which can cause health effects when inhaled by humans. [21]. In addition, SLCPS also has the potential to cause cardiovascular disease, lower birth rates, liver disease and stroke [21,22]. Furthermore, the practice of open burning of waste has been demonstrated to be a contributing factor to the development of respiratory diseases. A review of the extant literature reveals that pollutants, including particulate matter and toxic gases, have the potential to induce respiratory irritation, coughing, wheezing, and more severe conditions such as bronchitis and asthma. [21]. A harmful particle and pollutant resulting of open burning waste can penetrate the lungs, causing long-term damage and increasing the risk of chronic respiratory conditions [23].

From the observation and interview with people in that's area shown there is no Temporary waste Storage (TWS) in the plantation area. TWS or commonly known a Temporary Waste Storage is a important facility to manage household waste. Temporary Waste Storage aims to reduce the negative impact of waste accumulation and change people behavior [24]. Based on the research TWS have a positive perception from community in Malang city [25]. TWS with Reduce, Reuse, Recycle (3R) system can significant manage a waste and making the circular economy alive, because with 3R system can convert waste into useful material and it can reduce waste generation. From another study supporting factor in the development of temporary waste storage is communities knowledge, because communities knowledge plays an important role in converting waste into useful materials. Waste can have economic value, and TWS facility is important to increasing awareness of the environment [26].

CONCLUSIONS

The Banjarsari plantation does not have a temporary Waste Storage (TWS), resulting in the community processing waste by burning. Processing waste by burning can have negative effects on the environment and health.

Suggestions for the Banjarsari Plantation to work with the Environmental Agency to create a TWS or a place that will accommodate the plantation community's waste. In addition, activities by empowering the community can be done to realize better waste management, such as establishing a waste bank or holding activities with mothers, namely making crafts from plastic waste, can also be filled with activities on how to make compost..

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