



The Analysis of Chemical Waste Management System in Integrated Waste Management Site of Lampung University

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Abstract

The waste management system of the Integrated Waste Management Site of the Lampung University is considered quite effective in handling the university organic waste, besides that the university also gets commercial benefits. This study analyzes the chemical waste management system at the Integrated Waste Management Site of the Lampung University and its potential in reducing university chemical waste independently. The type of research carried out was using descriptive research and use a qualitative approach by conducting observational studies and in-depth interviews. Waste management activities at the Integrated Waste Management Site of the Lampung University include waste collection, sorting and waste processing activities. One of the programs in the waste management process at the Integrated Waste Management Site of the Lampung University is known as the Unila Waste Bank.

Keywords: *Chemical Waste Management; Integrated Waste Management Site*

Introduction

A healthy environment is the desire of every human being to support health status and provide comfort. The ideal condition of a healthy living environment according to the Indonesian healthy vision 2025 is an environment that is conducive to the realization of a state of physical, spiritual and social health, especially an environment which is free from socio-cultural insecurity and pollution, the availability of clean water and adequate environmental sanitation facilities, healthy housing settlements, and the realization of community life which has social solidarity by maintaining cultural values (Depkes, 2009). The efforts that have been made by the government in creating a healthy environment are quite a lot, but not all of these efforts are made by the community, both in cities and rural areas. Environmental health efforts cannot only be focused on the government, because environmental health is a shared responsibility. Therefore, the community needs to take a role in efforts to nourish the environment.

Talking about environmental health efforts is inseparable from the various problems it faces, one of which is the waste problem. Waste is a material or solid object that is no longer used by humans, or a solid object that has been used again in a human activity and thrown away (Notoadmodjo, 2007, Nasution, 2017; Simangunsong, 2016).

Waste is a serious problem to deal with seeing the impact it can produce. Poor waste management will certainly harm many parties. Not only the organizers of facilities or public agencies but also the surrounding communities. From several agencies or public facilities, universities or colleges are one of the agencies that produce a lot of waste every day. With hundreds to thousands of people in the universities that have a lot of routine activities even on holidays, of course there are large amounts of various types of waste every day. The type of waste produced from a university is generally inorganic waste which is leftovers from office or laboratory activities, plastic to organic waste of leftover leaves or wood from trees in the university environment. An integrated waste management system is a management system that integrates aspects of waste management planning with urban development, considers all related aspects, such as economic, environmental, social and institutional, political, financial and technical aspects simultaneously providing opportunities for all stakeholders involved in the planning and decision-making process simultaneously (Ginting, 2010; Lisdiyana, 2016; Lubis, 2012; Manik, 2016).

The integrated waste management is a management system that uses proper management so that the waste produced can be managed by all parties concerned, that way everyone can feel the impact of waste management. Not a few people think that an integrated waste management system is an effort to change the paradigm about waste so far, namely that waste is not a disaster but a profitable thing (Widyaningrum, 2016, Manik, 2016).

The procurement of the Integrated Waste Management Site (IWMS) system of Lampung University is already good, but the system that has been running for more than three years has not been able to overcome all the waste in this university, for example the problem of chemical waste, therefore the effectiveness of this management system needs to be reviewed. Based on the background above, the author wants to conduct research on the chemical waste management system at IWMS of Lampung University. The research was conducted to explain the chemical waste management system in IWMS of Lampung University.

Method and Material

The research was conducted using qualitative study by observational study and in-depth interview aimed to obtain the overview of the chemical waste management system at IWMS of Lampung University. This research was carried out from July 2022 to October 2022 starting from a preliminary survey, data collection and studying the waste management system at IWMS of Lampung University. This research instrument used was directed interviews in the form of a list of questions that have been prepared according to the topic to be discussed and direct observation in the field. We also used tools in the form of stationery, cameras to document activities and voice recording devices. The data obtained through field observations were then analyzed descriptively so that results, conclusions and suggestions were obtained. The study was carried out in accordance with the basic principles of health research ethics.

Result and Discussion

Lampung University is one of the state universities in Lampung Province. As a campus that is growing quite rapidly, especially in terms of physique and the number of students, it has an impact on increasing the volume of waste produced. Lampung University is located in Gedong Meneng, Rajabasa, Bandar Lampung. The area of the University of Lampung as well as Lampung Province has a relatively flat topography with an elevation of 125 - 135m, classified as tropical with an air temperature with a maximum of 34.50 °C and a minimum of 29.70 ° C and a maximum precipitation falling is 459.80 mm.

The waste management is a systematic, comprehensive and sustainable activity that includes waste reduction and handling. Referring to SNI regulation 19-2454-2002, the operational stages of waste management from rental activities to the final disposal of waste must be integrated by sorting from the source. Waste management activities at IWMS of Lampung University include waste collection, sorting and waste processing activities.

One of the programs in the waste management process at IWMS of Lampung University is known as the Unila Waste Bank. This program is an activity to collect waste that can still be used based on its type. This program was held in collaboration between IWMS of Lampung University, Emak.id Waste Bank and other waste banks. The purpose of this program is to reduce the volume of waste before it goes to landfills.

The Waste Bank program makes every bank customer have a customer passbook that must be brought when saving waste. The requirements to become a customer of the Unila Waste Bank are a photo of ID card for administrative purposes. Unila Waste Bank customers consist of lecturers, employees, students and the general public. Every Unila Waste Bank customer will have an Unila Waste Bank sack so that waste that has been collected and sorted according to type can be directly deposited and recorded in the passbook. The type of waste received and the price of waste vary depending on the type of waste deposited, ranging from paper waste, cans and iron, plastic waste and used cooking oil.

In the waste collection process, the garbage trucks transport garbage by going around the university, the garbage taken is organic waste in the form of leaves collected at some point by university cleaners and organic waste in the form of food waste from several canteens in Lampung University, then paper waste from the rest of the university administration. Garbage trucks do the collection once a day. The IWMS of Lampung University also receives inorganic waste such as shards and plastics, but waste in the form of shards will only be picked up if requested by the university or other agencies. Based on observations, in the waste collection activities, the canteen or university did not first sort out the waste that would be transported to the IWMS of Lampung University. The waste will be sorted after arriving at the IWMS of Lampung University. Waste is also not routinely transported from places that have been designated from the beginning as waste collection points by the IWMS of Lampung University, as a result of which the garbage at these points accumulates and is transported by campus waste managers to be transported to landfills and some dry waste is burned around campus. The obstacles in collecting this waste are limited human resources and the lack of optimal waste processing work which results in waste also accumulating in the IWMS of Lampung University.

The waste then comes to sorting process and the waste will be processed according to its type. The initial sorting and waste sorting phase should be carried out at the source of waste generation, but the waste that has arrived at the IWMS of Lampung University is still waste that has not been sorted. Therefore, the process of sorting and collecting waste according to the type and results of its products is carried out at the IWMS of Lampung University by officers. The waste must be disposed on plastic bins

and separated according to the type of waste based on the type of processing that will be carried out on the components of the waste.

The waste processing at the IWMS of Lampung University uses simple and appropriate technique, thus the equipment and materials used are also tools and materials that are easy to obtain or design. This simple waste processing has its own advantages and disadvantages, the advantage is that with simple tools and materials we can produce finished products that are ready to be marketed, but it lacks the time needed to process waste with a limited number of workers, then the products we produce will not be enough to meet market demand and compete with products made with faster and automated tools.

Conclusion

The waste management process at the IWMS of Lampung University includes the process of receiving waste, sorting waste and processing waste. The waste management program at the IWMS of Lampung University is the Unila Waste Bank. Further evaluation of the resources working at the IWMS of Lampung University is needed. It is supposed that the IWMS of Lampung University is able to improve waste management which includes planning, organizing, implementing, supervising and reporting considering that in this case the implementation in the service is not optimal. Further studies and evaluation of waste management are needed for further research.

References

- Depkes RI. (2009). Rencana Pembangunan Jangka Panjang Bidang Kesehatan 2005-2025. Diakses dari <http://www.depkes.go.id>.
- Ginting, S.E. (2010). Tinjauan sistem pengelolaan sampah di universitas medan. 5. Jurnal ilmu keolahragaan.
- Handayani, D.S., Budisulistriorini, S.H., & Nuraini, M.R. (2009). Kajian nilai ekonomi penerapan konsep daur ulang pada TPA Jatibarang Semarang. *Jurnal Presipitasi*, 7(2), 35- 44.
- Lisdiana, Widiyaningrum, P., & Nurrohmah, S. (2016). Pengelolaan sampah plastik di lingkungan sekolah adiwiyata. *Jurnal Lingkungan*. Semarang : FMIPA Universitas Negeri Semarang.
- Lubis, D.B. (2012). Pengaruh komposisi azzola dan sampah organik kota terhadap kualitas kompos yang dihasilkan. (Skripsi Universitas Sumatera Utara, Medan).
- Manik, K.E.S. (2016). Pengelolaan lingkungan hidup. Jakarta : Kencana Prenada Media.
- Mubarak, W.I.,& Chayatin, N. (2009). Ilmu kesehatan masyarakat : teori dan aplikasi. Jakarta : Salemba Medika. Halaman: 283-284.
- Nasution, N.H. (2017). Analisis sistem pengelolaan sampah di tpa terjun kecamatan medan marelان kota medan tahun 2017. (Skripsi Universitas Sumatera Utara, Medan).
- Notoatmotjo, S. (2007). Kesehatan masyarakat : ilmu & seni. Jakarta: Rineka Cipta, 188- 190.

Simangunsong, T.L. (2016). Pengolahan sampah di perguruan tinggi dan kontribusinya terhadap penurunan emisi gas rumah kaca. Jurnal penelitian. Yogyakarta: UPN “Veteran”.

Undang-Undang Republik Indonesia Nomor 18 Tahun (2008). Tentang Pengelolaan Sampah.

Widyaningrum, N.W.A., Pujiati, R.S., dan Moelyaningrum, A.D. (2016). Pengelolaan limbah padat di fakultas kesehatan dan non kesehatan Universitas Jember. Jurnal pustaka kesehatan, vol. 4. Jember: Universitas Jember.

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