STUDY ON THI M SOLID WASTE IN REA

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ABSTRACT

Nowadays, Municipal Solid Waste is the biggest environmental problem in Malaysia. The amount generated of the waste continues to increase in response to rapid increase in population, accelerated urbanization and industrialization process. The study on Municipal Solid Waste is important in order to determine and evaluate their composition and characteristic. With the obtained data, municipal solid waste can be managed with more efficiency. This research is carried out by segregating and weighing solid waste in residential area. Objectives of the study are to collect data of solid waste composition and physical characteristic, determine solid waste generation and analyze relationship affecting the solid waste generation. Data obtained from weighing and segregating the solid waste will be calculated manually. In the end of this study, we will get the result on highest composition of solid waste at the residential area and also the time when the production of solid waste is at their peak. From this research, it hope that can be a good help in order for us to manage solid waste better for Malaysia.

ABSTRAK

Pada masa kini, sisa pepejal merupakan masalah terbesar pencemaran di dalam Malaysia. Bilangan generasi sampah yang dihasilkan semakin meningkat akibat daripada pertambahan populasi penduduk serta kemajuan urbanisasi dan juga proses industri. Kajian tentang sisa pepejal penting untuk mengenalpasti dan menilai komposisi serta ciri-ciri sisa pepejal tersebut. Dengan data yang diperolehi, sisa pepejal dapat diuruskan dengan lebih baik. Kajian ini dijalankan dengan mengasingkan serta menimbang berat sisa pepejal di kawasan perumahan. Objektif kajian ini adalah untuk mengumpul data komposisi sisa pepejal dan ciri-ciri fizikal, mengenalpasti generasi sisa pepejal dan analisisi hubungan faktor yang mempengaruhi generasi sisa pepejal. Data yang yang diperolehi hasil daripada pengasingan dan penimbangan sisa pepejal akan dikira secara manual. Keputusan di akhir kajian menunjukkkan peratusan komposisi sisa pepejal yang paling tinggi untuk kawasan tersebut dan juga waktu di mana penghasilan sisa pepejal yang paling tinggi dalam tempoh kajian iaitu 28 hari. Hasil daripada kajian ini diharap dapat membantu untuk meningkatkan lagi pengurusan sisa pepejal di Malaysia.

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MSW	-	Municipal Solid Waste
US EPA	-	United State Environmental Protection Agency
US	-	United State
UK	-	United Kingdom
DoE	-	Department of Environment, Government of Tamil Nadu
NSWAI	-	National Solid Waste Association of India
DOC	-	Degradable Organic Carbon
IPCC	-	Intergovernmental Panel on Climate Change
SWDS	-	Solid Waste Disposal Site
ASTM	-	America Standard Testing Methods
SPSS	-	Statistical Package for the Social Science
CFR	-	Code of Federal Regulations
WHO	-	The World Organisation Health

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CHAPTER 1

INTRODUCTION

1.1 Preamble

The waste generation rate in Kuantan, the capital of Pahang is continuously rising up every year due to the uncontrollable consumption owing to the increasing population, the attitude towards shopping and the high living standard. It is expected that the amount of solid waste generated in Kuantan reach double in the next twenty years. Today Municipal Solid Waste (MSW) is the biggest environmental problem in Malaysia. The amount generated of the waste continues to increase in response to rapid increase in population, accelerated urbanization and industrialization process.

MSW, commonly known as trash or garbage (in the US), refuse or rubbish (in the UK) is a waste type consisting of everyday items we consume and discard. It predominantly includes food wastes, yard wastes, containers and product packaging, and other miscellaneous inorganic wastes from residential, commercial, institutional, and industrial sources. Examples of inorganic wastes are appliances, newspapers, clothing, food scrapes, boxes, wood pallets, rubber tires, and cafeteria wastes. MSW does not include industrial wastes, agricultural wastes, and sewage sludge. They are in either solid or semisolid form. The term residual waste relates to waste left from

household sources containing materials that have not been separated out or sent for reprocessing.

MSW includes wastes from many places and areas such as residential, commercial, institutional, and some industrial areas. It is been collected and managed by municipalities and growing faster than population due to increase of consumption rate. MSW is the main concerns of this project and has major impacts to environmental and human health.

1.2 Problem Statement

Changing lifestyles, the increasing use of disposable materials and excessive packaging are all contributing to an increase in the amount of waste being created. Waste management is now a global concern. The problems associated with MSW management are complex because of the quantity and diversity of the nature of waste and financial limitations on public services in large cities. The problem is not only confined to land, it includes air and water as well.

Malaysia is experiencing rapid economic growth and urban transformation over the last decade. The amount and types of solid waste have increased corresponding to the economic growth and improving living standard. According to (IMPAK, 2006), each Malaysian generate an average of 1.7kg of solid waste daily especially in major cities. If the solid waste were collected every day, it is estimated to be more than 15000 tonnes, which is the same height of 4 times Kuala Lumpur Tower. Solid waste has been managed traditionally over 30 years by burying in landfills with no special intention to study the adverse effect and the potential energy of solid waste.

1.3 Objectives

There are three objectives for this research based on the problem statement. The objectives are as below:

1. To collect data of solid waste composition and physical characteristic.
2. To determine the solid waste generation.
3. To analyze the relationship between factor affecting waste generation and the composition of municipal waste in Mahkota Aman residential area.

1.4 Scope of Study

This research mostly focus on composition and characteristic of MSW. Solid waste samples will be obtained from 1 municipal area which are Mahkota Permai with cooperation from the local people. Composition of municipal solid waste which is organic and non-organic can be determined by segregating the solid waste from research area that been weighed. For organic, we will directly weighed but for non organic, we will separate into two categories which are recyleable and non-recyclable. We will study factors that effect solid waste generation and analyze the relationship between factors and compostion of MSW.

1.5 Significant of Study

The study on MSW is important in order to determine and evaluate their composition and characteristic. Furthermore, waste management is an essential task which has important consequences for public health and well-being, the quality and sustainability of the urban environment and the efficiency and productivity of the urban economy. In most cities of developing countries, waste management is inadequate: A significant portion of the population does not have access to a waste collection service and only a fraction of the generated waste is actually collected. Systems for transfer, recycling and/or disposal of solid waste are unsatisfactory from the environmental, economic and financial points of view. With the obtained data, municipal solid waste can be managed with more efficiency.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter will discuss about the data collection and sampling methods to gather the data on MSW composition in Mahkota Aman. In this chapter, we will discuss about sampling procedure, sample; focus and locations, and equipment involved.

3.2 Sampling Procedure

For this study, we will collect some data and information, and MSW sample from residential area in Mahkota Aman. In this study, we will used Multipliers Method; which involving MSW sampling and surveys method. From this activity, we can have data on MSW composition and factor affecting waste generation. Working procedure will be discussed in the flowchart below:

3.2.1 Map Area

For this study, we will be focusing on Mahkota Aman residential area, which has full facilities. Mahkota Aman consists of residential area, commercial area, and facilities areas; public hall and mosque.

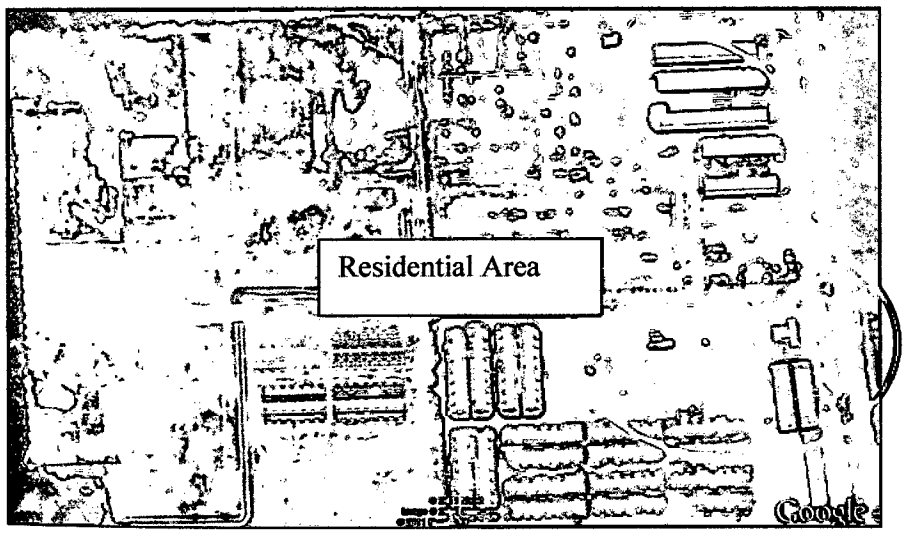

Figure 3.1: Mahkota Aman plan view

From this map, we will be focussing on facilities area; commercials, and public hall. Sample will collected on random locations with resident or owner cooperation.

3.2.2 Procedure

Each resident involve will received plastic bags to store MSW produce. He or she has to divide waste produce into 2 bags; for organic and inorganic waste. These wastes will be collect for 7 28 days in 3 month periods.

We will collect one location at a time. For each location, we will get MSW sample from the owner, and put it on weighing scales to get the total weight. From this step, we will get the weight of organic and inorganic waste. Then, inorganic waste will be segregate to recycle and non-recycle categories. Recycle materials such as paper, glass, tin and aluminium. For non-recycle materials such as ceramic, dust, woods, and plastic. Each category will be measure and recorded in form for data purposed.

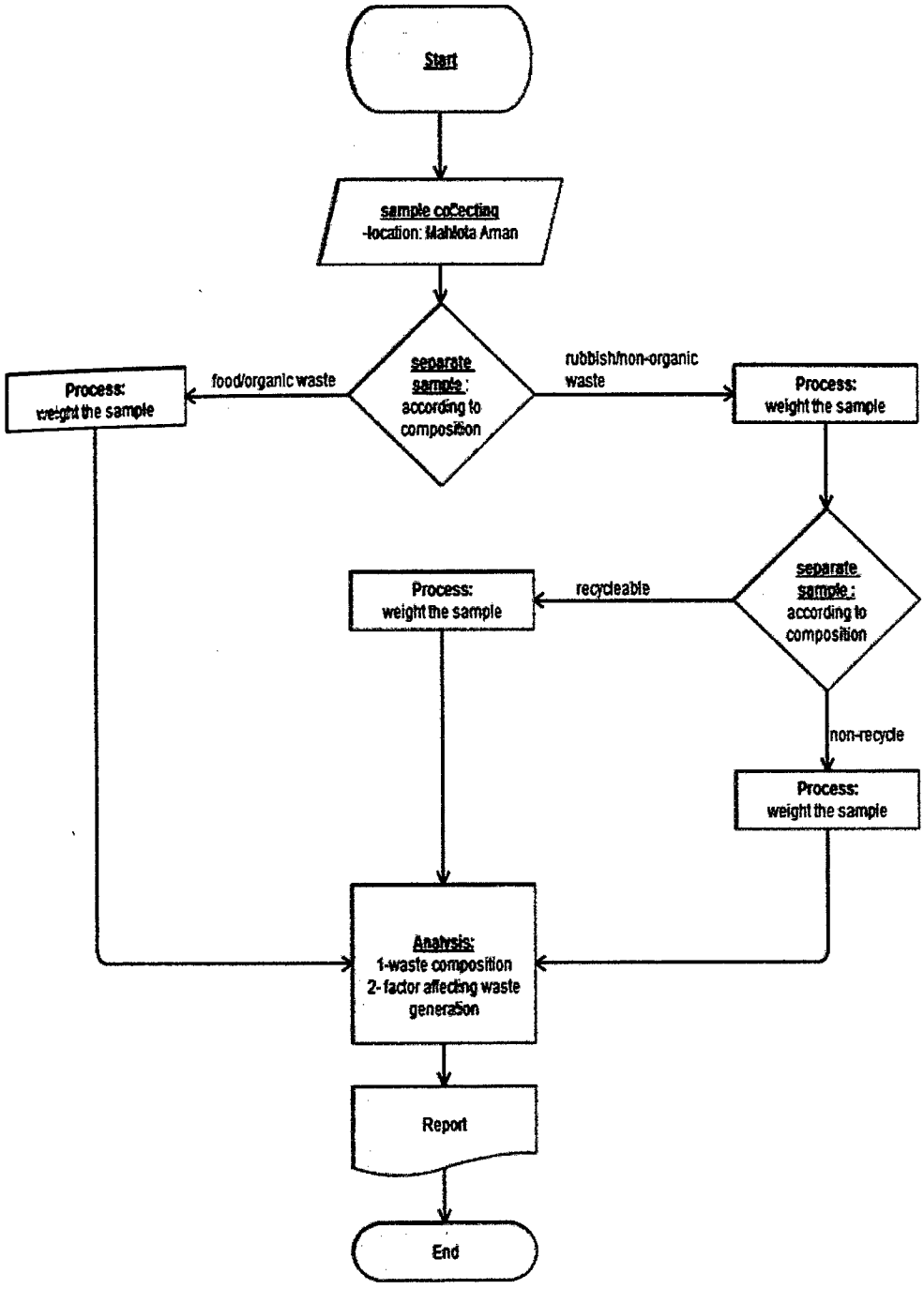

Figure 3.2: Work Flow for Sampling Method

3.2.3 Equipments

In this study, data collected based on its weight and compositions. We will need these equipments to assist MSW sampling activities. We will provide all of the resident involve with plastic bags. Each resident will be given 2 pieces of plastic bags; for organic and inorganic waste.

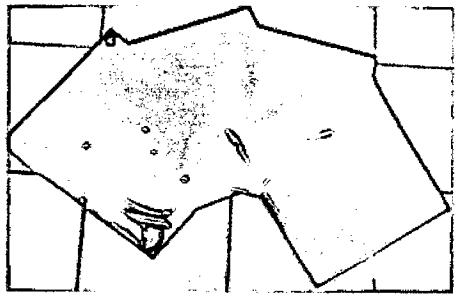

Figure 3.3: Plastic Bags

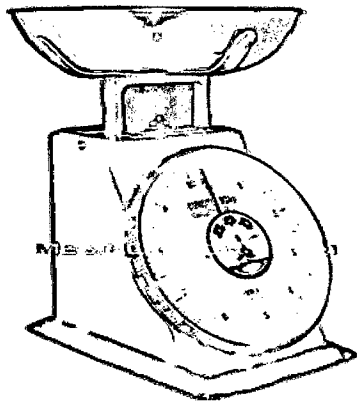

Figure 3.4: Weighing Scale 10 kg

3.3 Questionnaire

3.3.1 Introduction

In order to achieve the objective of study, the questionnaire has been distributed to the community. There were a total of 100 copies of questionnaire has been sent to the target respondent. There are 60 samples in our research which consist 4 phases of houses.

In the questionnaire, there are 3 sections consist of (i) factor affecting solid waste generation (lifestyle), (ii) public awareness and (iii) solid waste management.

3.3.1 Factor affecting Solid Waste Generation (lifestyle)

Factors that influence the quantity of municipal solid wastes generated include geographic location, season of the year, collection frequency (amount collected), characteristic of population, extent of salvaging and recycling, public attitudes and legislation.

In this questionnaire we will see which one is the highest factor that affecting waste generation in that residential area.

3.3.2 Public Awareness

A critical component in any waste management program is public awareness and participation, in addition to appropriate legislation, strong technical support, and adequate funding. Waste is the result of human activities and everyone needs to have a proper understanding of waste management issues, without which the success of even the best conceived waste management plan becomes questionable.

3.3.3 Solid Waste Management

Lifestyle is one of the major factors that affecting waste generation. So, that's why we use lifestyle as one of the categories in our questionnaire such as job status and income. Based on one research, the richer we get, the more we discard.

3.4 Data Analysis

Data from the questionnaire will be analyze manually which involve the percentage of the highest respondent's chooses. Then, discussion will be made using the highest percentage from the data.

This method will be used in order to analysis data from the questionnaire. After distributed the questionnaire and respondents have returned their completed questionnaires, then we will analyze it. Once completed, we will be able to get the highest percentage. Then, we can also find relationships between variables.

CHAPTER 4

RESULT AND ANALYSIS

4.1 Introduction

This chapter focuses on analyzing the result collected through the questionnaire survey and data gathering in Mahkota Aman residential area. The purpose of this questionnaire and data gathering is to get information from the respondent about solid waste management and solid waste that been produced by the consumer.

The data collected are converted into form of tables and figures which give more meaningful, useful and informative formats. The data will be expressed in the form of percentage and according to the suitability of the analysis itself.

This chapter discusses the data analysis obtained from the data collection method at study area. The purpose of the analysis is to obtain the composition and the average rate of solid waste generation.. Indirectly, the relationship between the factors affecting the waste generation can be determine. It also reviews about the solid waste management at the study area, and their awareness regarding these issues.