STUDY ON SOLID WASTE GENERATION AMONG THE RESIDENTIAL AREA IN ALOR SETAR, KEDAH.

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I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the Bachelor Degree of Civil Engineering

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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at University Malaysia Pahang or any other institutions.

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ABSTRAK

Sejak akhir-akhir ini, jumlah sisa pepejal yang dihasilkan semakin meningkat disebabkan oleh perkembangan pembangunan yang pesat, peningkatan populasi dan peningkatan aktiviti industri. Justeru itu, ia sedikit sebanyak telah membawa pelbagai masalah kepada alam sekitar dan hal ini perlu diberikan perhatian khusus. Kajian ini bertujuan untuk mengenal pasti pelbagai jenis sisa pepejal yang dihasilkan di kawasan perumahan sekitar Alor Setar, Kedah dan untuk mengukur tahap kesedaran dan kefahaman terhadap amalan kitar semula dalam kalangan isi rumah. Bagi mendapatkan jumlah penghasilan sisa pepejal, ianya dikumpul dengan kaedah pengasingan dan timbangan berat sisa pepejal dari 50 buah rumah yang telah dipilih. Sisa pepejal yang dikumpulkan dari sampel akan dipisahkan kepada empat komponen iaitu sisa perumahan, sisa taman, sisa pukal dan sisa berbahaya. Di samping itu, kira-kira 162 borang soal selidik telah diedarkan untuk mendapatkan maklumat mengenai data pengenalan, pengurusan sisa pepejal dan kesedaran awam. Pada akhir pengumpulan data, kesemua data akan dianalisis dan semua keputusan dari analisis ini dinilai, dibincangkan dan diringkaskan. Menurut kajian ini, antara empat komponen sisa, sisa perumahan (577.67 kg/minggu) menjadi kategori sampah tertinggi yang dibuang oleh para penduduk. Ia terdiri daripada sisa makanan, plastik, kertas, kaca, aluminium dan lain-lain. Kategori sisa kedua tertinggi adalah sisa taman dengan jumlah pengeluaran 19.54 kg/minggu. Seterusnya adalah sisa pukal dan terakhir sisa berbahaya dengan keduanya-duanya sebanyak 14 kg/minggu dan 10.52 kg/minggu. Oleh itu, kajian ini mendedahkan tentang pentingnya pengasingan sisa pepejal di rumah, pentingnya usaha untuk meningkatkan kesedaran dalam kalangan penduduk dan pentingnya amalan pengurangan sisa untuk memelihara alam sekitar dan dunia untuk generasi akan datang

ABSTRACT

Recently, the amount of solid waste generated increase rapidly due to rapid development, increase in population and industrialization. This may lead to uncontrolled environmental problem and need to be given special attention. This research aims to identify the different types of solid waste generated from residential area in Alor Setar, Kedah and to investigate the level of awareness and understanding towards recycling among household. In order to get the amount of solid waste generation, this study is carried out to get the data of waste collection by segregation and weighing of the solid waste from 50 selected houses. The solid waste collected from the samples will be segregate into four components which are household waste, garden waste, bulky waste and household hazardous waste. Other than that, there is about 162 questionnaires that were distributed to get some information about the identification data, solid waste management and public awareness. At the end of data collection, all of the data will be analyzed and all findings from the analysis are being evaluated, discussed and summarized. According to this study, among all four components of waste, household waste (577.67 kg/week) turns to be the highest amount of types of waste that resident discard, which comprises of food waste, plastics, paper, glass, aluminium and others. The second highest types of waste is garden waste with total 19.54 kg/week of production. Next is bulky waste and lastly household hazardous waste with both of waste are 14 kg/week and 10.52 kg/week of production waste respectively. Hence, these studies suggest that the importance of sorting of solid waste at home, effort to improve awareness among resident and practicing to reduce the waste produced in order to preserve the environment and world for our future generation.

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LIST OF ABBREVIATIONS

SWM	Solid Waste Management
3R	Reduce, reuse, recycle
RM	Ringgit Malaysia
LFG	Landfill Gas
MSW	Municipal Solid Waste
SWPCM	Solid Waste and Public Cleansing Management
ABC	Action Plan for a Beautiful and Clean Malaysia

CHAPTER 1

INTRODUCTION

1.1 Introduction

Solid-waste management, the collecting, treating, and disposing of solid material that is discarded because it has served its purpose or is no longer useful (Jerry A. Nathanson, 2010). Solid waste management (SWM) can be referred as the method to control waste generation, storage, collection, transfer and transport, processing and disposal of solid waste (SW) with the best practice of public health, financial, economics, engineering, administrative, and environmental considerations. It has become a momentous environmental, public health and economic concern to the world, especially in developing country. A study conducted by SW Corp showed that Malaysians generated 38,000 tonnes of solid waste daily in 2016, of which 15,000 tonnes was food waste (Danial Albakri, 2016). In order with that, Malaysian government is very committed to improve the quality of solid waste management over the last decade.

Malaysia has many solid waste disposal sites but it is not enough to accommodate the amount of garbage produced (Malaysian Digest, 2015). To avoid it from become worse, a federal programme was formulated as part of the Solid Waste & Public Cleansing Management Act 2007 (Act 672) which aims to reduce the amount of solid waste sent to dumpsites by 40% by the year 2020. The residents in the Federal Territory of Putrajaya, Kuala Lumpur, Pahang, Johor, Melaka, Negeri Sembilan, Kedah and Perlis are involved in this programme. Through this programme, a maximum fine of RM1,000 will be imposed on household who failed to separate solid waste according to types in suitable plastic bags before dumping them, starting on 1 June 2016. Notices will be issued to those who fail to do so in the first three months after the Act is implemented, and action will be taken if they still refuse to do so as required under Act 672.

Other than that, programme such as 3R (reduce, reuse and recycle) is the most effective way that can help to reduce the amount of solid waste production and transmission to the landfill. On 1st September 2015, programme named "Separation of Solid Waste at Source" under supervision of Solid Waste Management and Public Cleansing Corporation (SW Corp) was implemented in order to encourage residents to separate the solid waste produced at source by the composition of the solid waste like paper, plastic and other recyclable materials such as glass or ceramic, can, aluminium, iron, metal, electronic waste, fabric, shoes, leather, and dangerous waste. Not only that, residents also has to separate waste remnants like leftover food, diapers, and other organic waste.

1.2 Problem Statement

Generally, the production of solid waste in Malaysia increased day by day, in line with the rapid growth of economic and the rapid developments of cities. The increase of urban population in Kedah had contributed to the increase of solid waste generation. It will be worsen if the minimization of waste is not practiced by every household.

Our society eventually lack of the knowledge about the importance of solid waste recycling practice, thus affects the community to apply it in everyday life. The knowledge is important to predict waste segregation behaviour. Basically, increasing knowledge will translate into a change of behaviour.

Other than that, environmental awareness among public in Malaysia is still insufficient. The reason for the low recycling rate is due to a "much lower" level of awareness on the 3Rs: Reduce, Reuse and Recycle (The Star, 2017). Malaysia should improve the awareness of recycling to the whole society by conducting more awareness campaign, giving recycling module to teachers, talks and exhibition and more accessible recycling facilities.

1.3 Objectives

The objectives of this study are:

1) To quantify solid waste generated at residential area
2) To characterized types of solid waste generated
3) To investigate the level of awareness and understanding towards recycling among household

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