

STUDY ON CLINICAL WASTE
MANAGEMENT AT HEALTHCARE CENTRES
IN KUANTAN, PAHANG

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SUPERVISOR'S DECLARATION

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 degree in civil engineering.

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STUDENT'S DECLARATION

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 Universiti Malaysia Pahang or any other institutions.

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STUDY ON CLINICAL WASTE MANAGEMENT AT HEALTHCARE CENTRES
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ABSTRAK

Seperti mana-mana negara membangun yang lain, terdapat peningkatan yang ketara dalam penjaan sisa klinikal sejak beberapa dekad yang lalu. Walaupun sisa klinikal menghasilkan kesan yang serius kepada manusia dan alam sekitar, hanya sedikit perhatian diarahkan kepada pengendalian yang sewajarnya dan aspek undang-undang. Kajian ini bertujuan untuk mengkaji pengurusan sisa klinikal di pusat penjagaan kesihatan di Kuantan, Pahang. Terdapat 10 pusat penjagaan kesihatan yang terlibat dalam kajian ini, dan 10 responden dikaji dari setiap pusat penjagaan kesihatan. Penyelidikan ini dijalankan dengan menggunakan tiga kaedah, iaitu lawatan tapak, wawancara, dan soal selidik. Dari lawatan tapak dan wawancara, kami dapat mendapatkan maklumat umum tentang pengurusan sisa hospital. Daripada soal selidik, kami memperoleh data mengenai data demografik responden, dan data mengenai penjaan dan pengurusan sisa klinikal. Kemudian, data menganalisis untuk menghasilkan hasil. Daripada data yang dianalisis. Kebanyakan jenis sisa klinikal yang dijana daripada pusat penjagaan kesihatan adalah sisa farmaseutikal, sisa kimia dan tajam. Sumber sisa ini terutamanya dari pesakit dan ubat-ubatan. Kaedah pengasingan yang digunakan terutamanya di pusat penjagaan kesihatan yang dikaji adalah menggunakan mesin. Kebanyakan penjagaan kesihatan mempunyai sisa klinikal yang dikumpulkan sekali seminggu. Pengangkutan sisa klinikal dengan menggunakan troli kebanyakannya digunakan di pusat penjagaan kesihatan yang dikaji. Kebanyakan pusat penjagaan kesihatan yang ditinjau tidak mempunyai insinerator. Pengendalian sisa berjangkit sangat baik di pusat penjagaan kesihatan. Sisa klinikal diasingkan dengan cekap. Peralatan perlindungan disediakan secara tetap oleh pusat penjagaan kesihatan dan digunakan dengan betul. Para responden berpuas hati dengan pengendalian klinikal. Latihan pengurusan sisa klinikal adalah berkesan dan membantu responden meningkatkan pengetahuan responden mengenai pengurusan sisa klinikal. Keseluruhan keberkesanan pengurusan sisa klinikal di pusat penjagaan kesihatan adalah sangat baik berdasarkan jawapan responden.

ABSTRACT

As any other developing countries, there are a significant increase in the generation of clinical waste over the last few decades. Even though clinical waste produce serious impact to the human and the environment, only minor attention is directed to its proper handling and legal aspects. This study seeks to examine the management of clinical waste in healthcare centre at Kuantan, Pahang. There are 10 healthcare centres that are involved in this study, and 10 respondents are surveyed from each healthcare centre. The research is conducted by using three methods, that are site visit, interview, and questionnaire. From the site visit and interview, we able to get the general information on the waste management of the hospital. From the questionnaire, we obtained the data on the demographic data of the respondent, and the data on clinical waste generation and management. Then, the data are analyse to produce the result. From the data that were analysed. Most of the type of clinical waste generated from the healthcare centres, are pharmaceutical waste, chemical waste, and sharps. The sources of these waste mainly from the patient and drugs. The method of segregation mainly used at the surveyed healthcare centres are by using machines. Most of the healthcare have the clinical waste collected once a week. Transportations of clinical waste by using trolley are mostly used at the surveyed healthcare centre. Most of healthcare centre that were surveyed has no incinerator. The handling of infectious waste is excellent at the healthcare centre. The clinical waste is segregated efficiently. The protective equipment is provided regularly by the healthcare centres and used properly. The respondents are satisfied with the handling of clinical. The clinical waste management training is effective and helps the respondents to improve the respondent knowledge on clinical waste management. Overall the effectiveness of the clinical waste management at the healthcare centres are excellent according to the respondents.

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LIST OF SYMBOLS

°C degree celcius

LIST OF ABBREVIATIONS

WHO	World Health Organization
HCF	Healthcare Facilities
HCW	Healthcare Waste
HIV	Human Immunodeficiency Virus
SW	Scheduled Wastes
AIDS	Acquired immunodeficiency syndrome
CSW	Clinical solid waste

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Human activities, changes in lifestyle and consumption pattern has resulted in an increase in solid waste generation rates. Consequently, in the recent decade, public concern over the waste management and the pollution problems caused by waste generation have attracted significant attention and a great deal of research has been conducted to evaluate the appropriate waste treatment options to minimize environmental pollution and maximize resource recovery. (Williams, 2005).

During the recent decades, Medicines is one of the significant sectors that showing improvement throughout the world. However, waste generated at the medical institution, known as clinical waste, has not attract the same level of attention compared to other type of waste, especially in the developing country. In recent years, concern over the solid waste from healthcare facilities (HCFs) such as hospitals, clinics, pathological laboratories, pharmacies and other supported healthcare services) has increased throughout the world (DenBos and Izadpanah, 2002). This is due to waste arising from HCFs, mainly from hospitals and clinics, is potentially dangerous since it can spread diseases because of the infectious nature of the wastes, and/or cause injury through the mismanagement of clinical solid waste (Abd El-Salam, 2010; Al-Khatib and Sato, 2009). The production of these waste will continue to be an on-going phenomenon as long there are human activities.

1.2 Problem statement

Clinical wastes differ from any other wastes that being produced in hospitals. Sharps, human tissues or body parts and other infectious materials contain in clinical waste poses potential health and environmental risks (Baveja *et al.*, 2000). By weight, approximately 15 – 25% of clinical waste is considered infectious (Shinee *et al.*, 2008). Even though the current practices of clinical waste management are different from hospital to hospital, the problematic are similar for all healthcare institutional from segregation, collection, packaging, storage, transport, treatment and disposal (Tsanoka *et al.*, 2007). Improper clinical waste management will lead to environmental pollution, unpleasant odour, multiplication of insects, rodents, and worm may lead to may lead to transmission of diseases such as cholera, hepatitis, or typhoid through the injuries of the contaminated sharps.

Management and disposal of clinical waste in Malaysia is fully controlled by the Environmental Quality (Scheduled Waste) 1989. According to Zaimastura (2005), clinical waste generated from hospitals need a comprehensive and coordinated management. Poor management will lead to increased exposure to infectious diseases such as Hepatitis B and AIDS. Therefore, clinical waste control is very important. The main source of clinical waste disease is caused by accident involving syringes and sharp instruments. Transportation of clinical waste also has a specific guideline for reducing the risk of accidents.

Apart from the policies and guidelines, there are other initiatives that were undertaken by the government. One of the initiative is the training of hospital staff in the development of an action plan for segregation, handling and transportation of hospital wastes in the hospitals of central revenue collection point at the central storage facility and the production of a clear system that will detect movement from the time of hospital waste generated until the time he was dumped. The privatization program is one of the other initiatives taken by the government in addressing this problem (Khainih Tasan, 2005). However, this issue was still continued and even getting serious.

1.3 Objective of the study

The purpose of this study is to investigate the clinical waste management at clinics in Kuantan, Pahang. The objective are as follows :-

- 1) To determine the type of waste generated at the clinics and where it source come from.
- 2) To access clinical waste management practices at hospital in Kuantan, Pahang.
- 3) To determine the level of effectiveness of clinical waste management the clinic at the clinics in Kuantan, Pahang.

1.4 Scope of study

The research focus on the healthcare centre in Kuantan, Pahang. Question are prepared by the interviewee and answered by the staff that are working at the clinics. The research is restricted because there are many clinics in Kuantan district. Therefore, only ten government healthcare centre are chosen and 10 respondents will be surveyed on clinical waste management from each healthcare centre. Survey are conducted by using questionnaire to the staff during the operation hours of the clinics. The survey must be conducted during the staff free time, and not to be conducted during the treatment of a patient or experimenting a sample.

1.5 The importance of the study

This study is meant to draw attention of the clinics to identify the type of clinical waste that may produce during the treatment of the patient or during experiment of a sample and how are the waste are being managed at the clinics. Furthermore, the study is carried to how well the clinical waste management from the point view of the staff.

Research is conducted by the staff point of view by questioning them about suitable question that related to the clinical waste that were produced during the treatment or experiment. Type, sources, segregation, collection, and transportation of the waste

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