HEALTH RISK ASSOCIATED WITH MANAGEMENT OF MUNICIPAL SOLID WASTES IN MALAYSIA

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INTRODUCTION

- Population of Malaysia in 2016: estimate31,077,000
- Average per-capita waste generated/person

0.85 kg/person/day

1.5 kg/person/day (major cities)

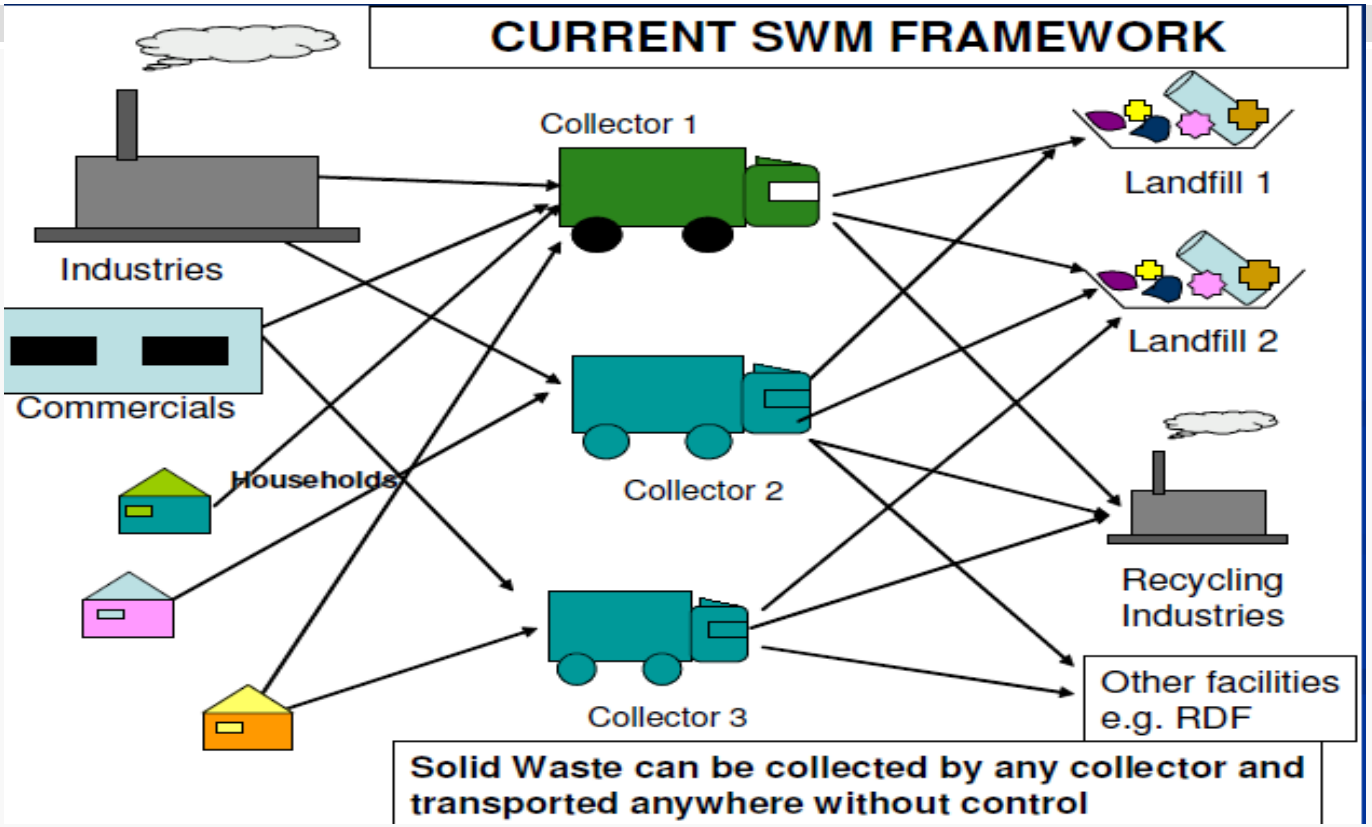
- Rate of waste generation in Malaysia is increasing due to :

a) Community activities – commercial, institutional, industrial, markets.

b) Economic activities.

c) Type of waste generator and land use

Solid Waste Management in Malaysia



Problem Statement

- Separation at source between recyclables and non-recyclables are done on voluntary basis by Malaysians
- Collection mechanism done by contractors appointed by Local Authorities. A two plus one (2 + 1) collection system: 2 days for residual and 1 day for recyclable waste
- This year the government will make it compulsory for Malaysian household to separate the waste at source

Problem Statement

- Open Dumping

Open Dumps

- Problems:
  - Breeds pests
  - Health hazard
  - Cause of water pollution
  - Air pollution
  - Odor and smoke nuisance
  - Fire hazards Unsightly

COMPOSITION OF MALAYSIAN MSW

Composition	Percentage (%)
Organics	46.97
Plastic	20.28
Paper	17.89
Metal	4.31
Glass	2.60
Inorganics	0.17
Others	7.81
Average Moisture Content	55

Potential Health Risk from Open Dump

- *Salmonella* spp. in solid wastes comes from food wastes. Among the 2000 serotypes of *Salmonella* spp., two serotypes, namely *Salmonella*, *S. typhi* and *S. paratyphi* (A, B, C), are the most dangerous to people.
- The most common pathogenic bacteria in municipal solid wastes include *Clostridium perfringens, Escherichia coli, Listeria monocytogenes, Pseudomonas aeruginosa, Salmonella* spp., *Staphylococcus aureus,* and *Klebsiella* spp. Most of these pathogens originate from food wastes.

Potential Health Risk from Open Dump

- A wide range of fungi, such as *Aspergillus* spp., produce several types of toxins. The ability of fungal spores to survive in the environment has also reported in the literature. Şahil and Otag (2013) [21] indicated that *Aspergillus* spp., *Fusarium* spp., *Acremonium* spp., *Alterneria* spp., and *Cladosporium* spp. can survive for more than one year in sand at room temperature.

Segregation, treatment, recycle and disposal

- Wastes generated are segregated, treated whenever needed and then recycled or disposed off at 165 disposal sites all over the country which cater up to 95% of Malaysian waste .

- However, about 80% of these open dumps have almost reached full capacity and are expected to be shut down over the next few years

Approved Land-fill Sites in Malaysia, 2013

80% have reached maximum useful life!

We already have too many land fill site, and 80% of them have reached it's useful life also. It is high time for us to seriously think about recycling our waste

Current Challenges in SWM in Malaysia

LANDFILL. Authorities in major cities in Malaysia are studying other waste management approaches. Among them is an approach to move away from unsanitary landfills

INCINERATION is the second mostly used method to manage waste in Malaysia. It is one of the most effective means of dealing with various types of wastes.

INCREASING COST. 40% - 80% of Local Authority expenditure is on managing solid waste and public cleansing. In this situation, LA is in most cases incapable of responding to this high cost expenditure, so government outsource.

PUBLIC AWARENESS. The government has launched several recycling campaigns since the early years of 2000 to involve the participation of NGOs and community groups, unfortunately not that successful. Data has shown 85% of Malaysian know about recycle, but only 15% did recycled

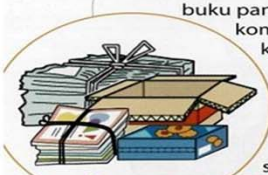
CARA KITAR SEMULA
(*ART OF RECYCLING*)

Barangan Kitar Semula

botol minuman ringan
botol jus
bekas jem & makanan
botol sos & perasa
botol vitamin & kosmetik

Botol Kaca

Sebelum dikitar
Tuangkan air,
basuh & keringkan
Tanggalkan penutup



surat khabar & majalah
buku panduan, buku sekolah & cerita
komik & direktori
kertas komputer
kertas hitam & putih (A4, F4...)
risalah & katalog
kalendar, poskad & kad
ucapan, bungkusan pos &
resit, fail kertas & sampul
surat, kotak kertas

Kertas

Sebelum dikitar
Surat khabar & majalah
- Ikat berasingan

Kotak
- Buka & ikatkan dalam ikatan kemas

tin aluminium, semua tin minuman
ringan & tin minuman lain
tin makanan & sos,
tin serbuk minuman (contoh:
susu & Milo), tin biskut &
makanan lain (tanpa
dimampatkan)

Tin & Aluminium

Sebelum dikitar
Tuangkan baki air
Basuh, kering & mampatkan

botol minuman ringan & jus
botol minuman air mineral
bekas makanan & sos
bekas sabun cecair &
detergen, botol vitamin
botol syampoo & losyen
beg plastik

Plastik

Sebelum dikitar
Basuh, kering &
kemekkan

Simbol-simbol kitar semula untuk plastik

1 PETE	2 HDPE	3 V	4 LDPE
5 PP	6 PS	7 OTHER	

Semua jenis bungkusan
karton minuman &
makanan

Pek Tetra

Sebelum dikitar
Bilas bungkusan
karton
Rata & ikatkan

Barangan Tidak Boleh Dikitar Semula

tisu & tuala kertas
kertas karbon
pembungkus makanan
kepingan aluminium &
kertas lilin
kertas lamina
kertas pasir , lampin

cawan & pinggan
pinggan kristal & ketuhar
cermin, cermin kereta &
panel tingkap, mentol
porselin & seramik
bekas berbahan toksik,
akuarium

tin cat & bahan bertoksik
radas makmal
pen
"styrofoam"

tin cat & cecair bertoksik lain
seperti gam & pelarut
tin aerosol

kasut
beg
bateri
termometer


DAYANI
FOLIO
KARYA
PELAJAR


Solution For My And your
Food Waste
Compost Chang!!!
LET'S RECYCLE UOR FOOD WASTE

Kaedah Penyediaan Compost Chang (bakul kompos)

CONTOH BAKUL YANG BOLEH DIGUNAKAN (BEKAS YANG MEMPUNYAI RONGGA UDARA/LIANG UDARA)

BAKUL DIGALAKKAN UNTUK DIALASKAN DENGAN KARPET BAGI MENGGELAKKAN BAHAN KOMPOS TERTUMPAH

BAKUL DIISIKAN DENGAN MEDIUM PENGURAI SEHINGGA 60% DARI BAKUL ATAU 3KG MEDIUM PENGURAI DAN DITUTUPKAN SUPAYA TIDAK DIMASUKI SERANGGA

*Nota:-
Berat medium pengurai yang sesuai untuk sebuah rumah adalah :

3 kg (2kg tanah + 1kg sekam)

COMPOST CHANG

FUNGI PENAPAIAN @
SEED COMPOST

MANUAL PENGGUNAAN

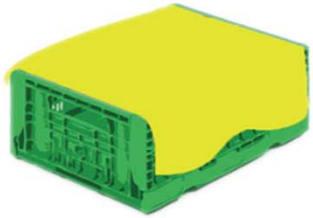
LANGKAH 1 | LANGKAH 2 | LANGKAH 3 | LANGKAH 4

Kaedah Menjalankan Pengkomposan

1. Sisa makanan dipotong kecil

2. Sisa makanan dibilas & ditapis

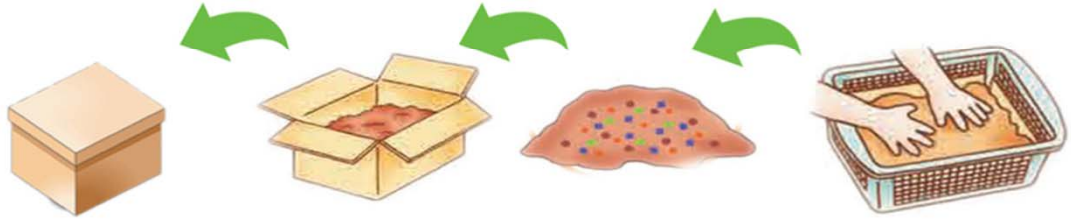
3. Sisa makanan dimasukkan ke dalam bakul kompos, digaulkan bersama medium penguraidan pastikan digaul serata



4. Bakul kompos ditutupi dengan kain bagi menggelakkan serangga masuk serta untuk mengekalkan suhu kompos

5. Ulang proses setiap hari sekali sehingga bekas penuh atau sehingga 3 bulan jika 500gram sisa makanan di letakkan setiap hari

6. Pastikan kompos digaul sekali setiap hari



7. Selepas 3 bulan atau sekiranya bakul telah penuh, keluarkan kompos dari bekas dan periksa kelembapannya. Sekiranya terlalu kering, tambahkan sedikit air

8. Simpan kompos di dalam kotak/bekas dan biarkan ia matang selama 2 minggu untuk ia menjadi hasil kompos

PROGRAM KOMUNITI

Gambar 1 : Penduduk yang terlibat di Kg. Paya Rumput Jaya Sg. Udang Melaka

Gambar 2 : Penduduk yang terlibat di Kg. Paya Rumput Jaya Sg. Udang Melaka

Conclusion

There are high potential of health risks from open dump of solid waste practices from certain bacteria reactions. A depth of lab analysis is needed.

A fundamental requirement for more efforts to increase effectiveness and efficiency in achieving the set objectives on solid waste management with an integrated and sustainable perspective is absolutely a necessity.

THANK YOU

Q & A SESSION

For any queries;

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