MUNICIPAL WASTE CHARACTERISTIS AND MANAGEMENT IN PANTAI DALAM, KUALA LUMPUR

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ABSTRACT

The primary purpose of this research was to study comprehensively the municipal waste generation (rate, quantity), waste characterization including (physical, chemical and biological parameters), heavy metal content, waste recovery and recycling, and socio economic aspects of municipal solid waste (MSW) generation and management in Taman Bukit Angkasa, Pantai Dalam, Kuala Lumpur and the surrounding areas. The waste characterization and management was determined with actual field observations coupled with questionnaire survey from a random sample of 250 households (200 flats houses, 25 long houses and 25 squatter residences). The quantification and other parameters (heavy metals, water extractable nutrients, nitrogen, pH, acidity, alkalinity, conductivity) were determined using standard methods (X-ray Fluorescence Spectrometry, Flame Spectroscopy, Kjeldahl Auto Analyser, Radiometer Electrical Conductivity measuring Instrument and pH meter).

An average of 1.8 kg of municipal waste was generated by residents' daily, which is higher than the national average generation rate of 1.0 kg per person. Almost 95% of the household waste was mixed waste. It was found that an improvement in the living standard not only results in an increase in the volume of waste generation, but also alters the characteristics of the waste disposed. The findings indicate that, the municipal waste had a C/N ratio of 28:1 for flats, 30:1 for squatter and 26:1 for long house. The average amount of water extractable elements in the waste, such as, Nitrate was 147 mg/L, Phosphrous 107.5 mg/L, Potassium 940.5 mg/L, Magnesium 155.5 mg/L,

Calcium 797.5 mg/L, Aluminium 18 mg/L and Chloride 120 mg/L. The composition of municipal waste generated varied depending on the human behavioral pattern and religious practices, festival seasons and status level. The moisture content in municipal waste from flats was very high (51.7%) because it contained more organic waste compared to waste from squatter (47.3%) and long house (43.8%). The mean pH of municipal waste was 5.98. The finding indicate that, the mean conductivity of municipal waste is 1,375 μS cm $^{-1}$ for flats, 957μS cm $^{-1}$ for squatter and 568.5 μS cm $^{-1}$ for long house.

The study also revealed that, 93.2% of the total respondents were disappointed with the inefficient management of MSW by the waste management municipalities. Improper management of MSW had resulted in a number of environmental impacts and health implications. The study exposed that 72% of the respondents from flats supported the imposing of a payment on plastic bags, and majority of the respondents (86%) supported the need for a drop-off center for all recyclable items. Public participation was not encouraging in solving MSW problems in the study areas. It was found that, the proper place to separate waste materials for recycling and re-use is at the source of generation. Some of the householders are becoming more aware of the importance of source separating newspaper, plastic, glass bottles, aluminum cans and ferrous materials. Waste separation at source can be encouraged by financial rewards, legislation and raising environmental awareness among the public. Solid waste recycling programs should be integrated with other MSW management options to abate degradation in urban environment.

Based on existing solid waste management practices in the study area, six issues were identified: very little emphasize on municipal waste management practices (planning, organizing, and controlling), poor legislative control, lack of public awareness and commitments to keep the environment clean, lack of public participation in decision-making process and lack of environmental considerations in development plans and programs.

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1. PPFBFS -prefer pack food buy from shop
2. HMHWCGA -how much household waste currently generating can avoided
3. HOGKW -household organic garden and kitchen waste
4. STYDARU -store your daily rubbish
5. KWSCONT -kind of waste storage containers used
6. LYSSWYH - long you store your solid waste in house
7. DROFCEN -support drop-off center
8. OWNSOR -own sorting
9. FERWACO - frequency of waste collection in a week
10. SAFWCO - satisfied with the frequency of waste collected in your area
11. SAESTS - satisfied service provided by street sweepers
12. WEPEEP -willing to pay extra for environmentally friendly products
13. HMEYWP -how much extra you are willing to pay
14. SIPCPSB - support imposing of a product charge on plastic carrier bags
15. HMPCYP -product charge you prefer
16. WHBYACT -what will your action be
17. SCCOF -sometimes communal containers over flow
18. PMOLMEC -packaging makes life easier and comfortable
19. YDTMCY - you depend too much on others to clean your back yard