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THE PRESENT SCENARIO OF SOLID WASTE DISPOSAL AND MANAGEMENT PRACTICE IN CHITTAGONG CITY CORPORATION

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Abstract*- A healthy life, cleaner city and a better environment are the logical demands for the city dwellers. The Chittagong City Corporation (CCC) is primarily responsible for collecting and managing waste in Chittagong, Bangladesh. The study has been carried out on the sources and collection process of solid waste and existing management practice in Chittagong City Corporation. The study uses semi-structured interview to garner data from local society, city corporation office and experts, and secondary data from published and unpublished sources, and systematically analyzes this material both using qualitative and quantitative analysis. It has been found that total 122 tons of solid wastes of different type are being generated daily. The responsibility of the management is of them is mostly an authority in community system and a few on the house owner. Of the total quantity 45-55 percent is collected efficiently and the rest is left. It is broadly estimated that between 10-15 percent of the total municipal budget is used for solid waste management. The wastes which are remain uncollected and dumped in open spaces, street and drains clogging the drainage system that creates serious environmental degradation and health risks. The collected waste is presently being disposed off mainly in a low-lying area. Few amount of waste are being reclaimed or salvaged for recycling according to its market value. Finally, this paper suggests a safe and sustainable dumping site for environmental protection to keep the city nice and healthy.*

Keywords: Solid Waste, Disposal, Management Practice, Sustainable Dumping Site, Environmental Protection.

1. INTRODUCTION

Urban solid waste management is currently been regarded as one of the most immediate and serious issues for city authorities due to its inadequate and often inefficient management and visible environmental degradation. Chittagong, the second largest city of Bangladesh is facing serious disruption in environment and public health due to uncollected disposal of waste on streets and other public areas, drainage congestion by indiscriminately dumped wastes, and contamination of water resources near dumping sites. A research has been said that at present 0.41kg/capita/day and it will be around 0.6kg/capita/day within 2025[1] due to day to day changing using products. Chittagong City Corporation (CCC), the responsible authority for solid waste management in the city, involved in collecting the waste from communal bins and secondary disposal sites transfer them to the ultimate dumping site, management of disposal site street sweeping and drain cleaning. Municipal corporations of the developing countries are not able to handle increasing quantities of waste and a significant portion of wastes are not properly stored, collected or disposed in the proper places for ultimate disposal due to lack of enthusiasm, consciousness, loyalty, as well as money. There is a need to work towards a sustainable waste management system.

2. MATERIALS AND METHODS

For this study, the waste generated area particularly Chittagong city in Chittagong district was selected. This survey consists of practical field observation and field based data collection of solid waste generation, collection, transportation of solid waste management situation through questionnaire and formal and non-formal interviews. The overall work to be done is described schematically by the flow chart showing in the Fig.1

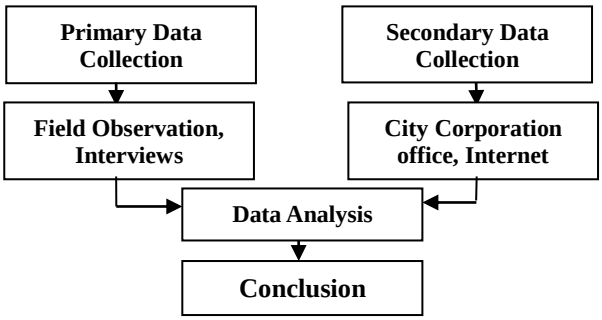

Fig.1: Flow chart research methodology

3. RESULTS AND DISCUSSIONS

3.1 Solid Waste Generation

Per capita solid waste generation is significantly depends on the different income level. From this survey found that the higher income level family produces 0.48kg/day per capita waste generation whereas the lower income level family produces 0.20kg solid waste per day per capita.

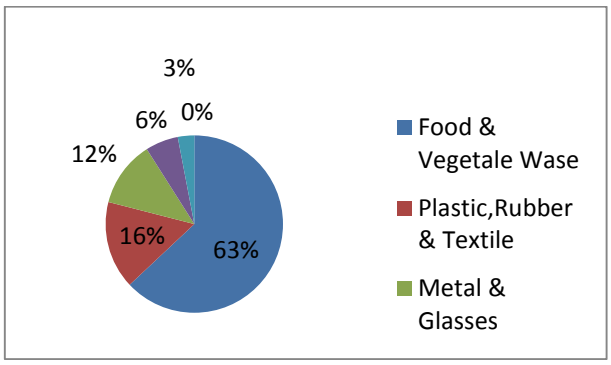

Fig.2: Composition of solid waste generation of CCC

Fig.2 shows the composition of solid waste generated in Chittagong City Corporation. One of the major compositions of generating solid waste is food and vegetable waste which is almost 63% of total waste generation (ton/day). The generated solid waste also contains paper products, plastics, rubber, textile, metal glasses, garden wastes and many other materials. Among all of this composition rock, dirt and others are found in a slighter amount (3%).[2]

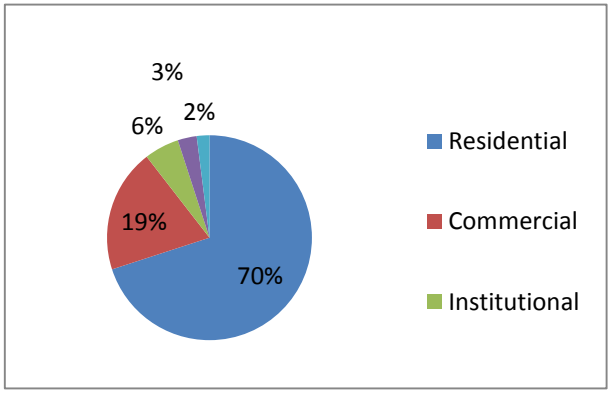

Fig.3: Different sectors to contribute the generation of solid waste

In CCC, residential sectors contribute 70% waste in total generation of solid waste. From the Fig.3 it can be seen that commercial sectors and institutional sectors contribute 19% and 6% waste in total generation of solid waste in CCC respectively.

3.2 Collection Route of Solid Waste

With the increase of the total quantity of solid waste the collection task is become more difficult because of high cost of fuel and labor. Generally, dustbin is used as the temporary dumping point of domestic, restaurant, industry, bazar or even open area waste than those wastes are transported by trucks, vans or handy trolley to the disposal point.

Fig.4: Open truck used waste collection of CCC

3.3 Existing Management Practice

Most recent study reveals that poor solid waste management system is present in the Chittagong city. In CCC, some canals passes through the city and dwellers living by the canals throw their waste in these canals. In the commercial places like New market, Chawkbazar, Port market, there is no waste bin or demountable container. The shop keepers dispose their waste in front of the road of the market which creates environmental pollution.

In CCC, MSW are usually collected by waste trucks from 5.30 am to 6.00 pm in seven different routes[3]. Due to limited number of SDS and vehicles, the waste collection is not satisfactory. There are only 10 running motorized vehicles, which cover mainly central six wards. In Chittagong city, the recycling shops are located in mainly Dewanhat market, New market, Port market, Halisahar, Bhatiary and other places. More than 350 recycling shops and 10 to 12 is wholesale recycling shops mare located in city areas, in which approximately 1800 to 2500 people are involved with this occupation. The small shops make profit 100-150 TK /day and the wholesale shop 5000-7000 TK/day. [4]

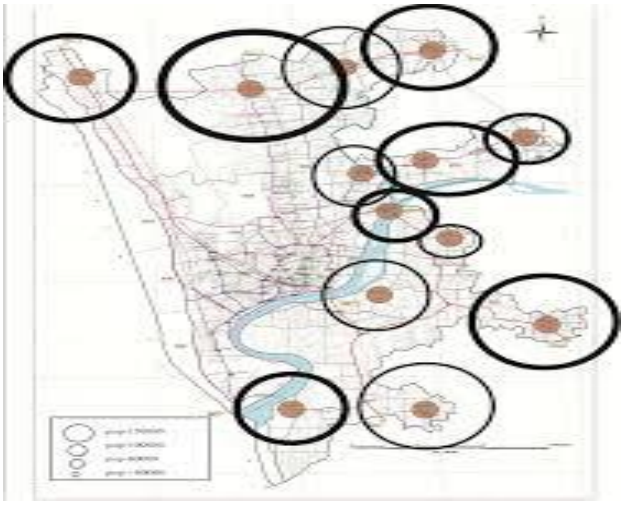

Fig 4: Collection points of wastes

3.4 Site Investigation

The present rate of population of Chittagong city is 1.5%. If we take this population growth rate as constant, after 25 years the total amount of population will be 9,000,000. In near future a solid waste treatment plant will be essential for the proper management of solid waste, generated by increasing population. Recently CCC is thinking about a treatment plant for Chittagong city[4]. A budget is allocated for solid waste management of Chittagong city. For the Chittagong city, there are two types of treatment process will be suitable.

A. Compost plant:

Composting is the process of bacterial conversion of organic solid and semi-solid wastes into compost which can be handled, stored and transported without and adverse environmental impact (k.SASIKUMAR Sep 7, 2009). Firinghee Bazar, situated in the ward no. 33 is suitable for the compost plant. The investigated area is better than any other places because:

- Population density is less than any other place.
- Compost material is available at or near the investigated site.
- Climatic condition is good for composting.
- Sufficient land area is available for compost plant.
- Easy transportation of composted materials.
- Environmental factors like PH, temperature, and presence of o2 is available.

B. Sanitary landfill:

Sanitary landfill may be define as the operation in which wastes are to be disposed in compacted layers and covered with a layer of earth at the end of each day's operation. When the landfill site has reached its ultimate capacity, a thick final layer of cover material is applied[5]. Investigated area for landfill is Gosaildanga, which is situated in ward 36. This place is suitable for landfill because it fulfills the bellows criteria:

- Sufficient land area is available for disposal of solid wastes for reasonable period of time.
- The cover materials are available at or near the landfill site.
- Environmentally acceptable with respect to noise, odor, dust and vector control.
- The movement of leachate and gases from the landfill is not contaminated the ground water aquifer.
- Communication facilities are good enough, comparing with other place.
- Suggested place is suitable because it is far from the city so the pollution rate is less.

4. CONCLUSION

Based on field survey, it is revealed that duo to the absence of integrated planning, physical and technical limitations, lack of coordination and communication among the city dwellers, private organizations, government authority and the city authority, the attempts have not been succeeded to improve the solid waste management. The city corporation can make the city cleaner and environment friendly by approaching integrated waste management system by planning efficient collection routes, utilizing the available resources, taking people awareness programme, design a sanitary landfill and by effective monitoring, assessment and refinement system. As an industrial based city, immediate attention must be needed in this sector.

5. ACKOWLEDGEMENT

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