

## Characterization of Solid Waste Management

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### ABSTRACT

Integrated waste management systems are one of the greatest challenges for sustainable development. For these systems to be successful, the first step is to carry out waste characterization studies. In this paper are reported the results of a waste characterization study performed in the Srimushnam area, Cudalore district, Tamil Nadu. The aim of this study was to set the basis for implementation of a recovery, reduction and recycling waste management program at the centre. It was found that the Srimushnam area produces 1.1 Metric ton of solid wastes per day; more than 55% of these wastes are recyclable or potentially recyclable. These results showed that a program for segregation and recycling is feasible on a area. This study comprises of percentage of water generated in srimushnam area. The study also showed that the local market for recyclable waste, under present conditions – number of recycling companies and amounts of recyclables accepted – can absorb all of these wastes. Some alternatives for the potentially recyclables wastes are discussed. Finally some strategies that could be used to reduce waste at the source are discussed as well.

**Keywords** – Solid waste, reduce, reuse, recovery, special strategies

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### I. INTRODUCTION

Solid waste is the unwanted or useless solid materials generated from combined residential, industrial and commercial activities in a given area. It may be categorized according to its origin (domestic, industrial, commercial, construction or institutional); according to its contents (organic material, glass, metal, plastic paper etc); or according to hazard potential (toxic, non-toxin, flammable, radioactive, infectious etc). Management of solid waste reduces or eliminates adverse impacts on the environment and human health and supports economic development and improved quality of life. A number of processes are involved in effectively managing waste for a municipality. These include monitoring, collection, transport, processing, recycling and disposal.

### II. REDUCE, REUSE, RECYCLE

Methods of waste reduction, waste reuse and recycling are the preferred options when managing waste. There are many environmental benefits that can be derived from the use of these methods. They reduce or prevent green house gas emissions, reduce the release of pollutants, conserve resources, save energy and reduce the demand for waste treatment technology and landfill space. Therefore it is advisable that these methods be

adopted and incorporated as part of the waste management plan.

### III. WASTE REDUCTION AND REUSE

The first Waste reduction and reuse of products are both methods of waste prevention. They eliminate the production of waste at the source of usual generation and reduce the demands for large scale treatment and disposal facilities. Methods of waste reduction include manufacturing products with less packaging, encouraging customers to bring their own reusable bags for packaging, encouraging the public to choose reusable products such as cloth napkins and reusable plastic and glass containers, backyard composting and sharing and donating any unwanted items rather than discarding them. All of the methods of waste prevention mentioned require public participation. In order to get the public onboard, training and educational programmes need to be undertaken to educate the public about their role in the process. Also the government may need to regulate the types and amount of packaging used by manufacturers and make the reuse of shopping bags mandatory.

#### IV. RECYCLING

Recycling refers to the removal of items from the waste stream to be used as raw materials in the manufacture of new products. Thus from this definition recycling occurs in three phases: first the waste is sorted and recyclables collected, the recyclables are used to create raw materials. These raw materials are then used in the production of new products. -quality product, The sorting of recyclables may be done at the source (i.e. within the household or office) for selective collection by the municipality or to be dropped off by the waste producer at a recycling centres. The pre-sorting at the source requires public participation which may not be forthcoming if there are no benefits to be derived. Also a system of selective collection by the government can be costly. It would require more frequent circulation of trucks within a neighbourhood or the importation of more vehicles to facilitate the collection.

#### V. WASTE COLLECTION

Waste from our homes is generally collected by our local authorities through regular waste collection, or by special collections for recycling. Within hot climates such as that of the Caribbean the waste should be collected at least twice a week to control flybreeding, and the harboring of other pests in the community. Other factors to consider when deciding on frequency of collection are the odors' caused by decomposition and the accumulated quantities. Descriptions of the main types of collection systems and characterizations are given in the table below.

#### VI. PRIMARY & SECONDARY COLLECTION

PRIMARY COLLECTION - VEHICLES AND EQUIPMENTS													SECONDARY COLLECTION AND TRANSPORTATION										
Whether Door to Door collection practices	If yes, No. of wards	%	Whether privatised practices	No. of wards privatised	No. of Dumpers	No. of HORE Containers	No. of RCC bins	No. of Push carts	No. of Tricycles	No. of Autorickshaws	Dumper/Placer	Compactor	Tractor	Lorry	Hook Loader	Power Wrecker	Auto/Mini lorry	Animal Cart	Debris Collected on Vehicle	No. of vehicles on road	% of vehicles on road		
22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
4 Ward	Yes	35%	-	-	-	-	-	6	-	-	-	-	-	-	-	-	1	-	-	-	-	8%	

#### VII. PROCESSING

Transfer Station		PROCESSING														Location		
No. of Transfer Stations	Location	Capacity (Y)	Extent (acres)	Made of processing Open dumping/Worm Composting/Window composting/Plastic recycling/Others	Capacity of the compost plant	No. of vehicles and equipment						Electronic Weigh Bridge	Capacity of the Electronic Weigh Bridge	Whether Compost yard is available	No. of sites	Extent of the compost yard (acres)	Location	
45	46	47	48	49	50	No. of Tractor	No. of Shredder	No. of Sifter	No. of Turn	No. of Lorry/Auto/Truck	No. of Scoop/cum Loader (JCB)	56	57	58	59	60	61	62
-	-	-	-	Vermi Composting	100MT	-	-	-	-	2	-	-	-	-	Yes	1	1.20	Mairames. And madan Sala

#### VIII. DISPOSAL

DISPOSAL SITE / COMPOST YARD																	REMARKS IF ANY
Survey No.	Class location of land	Year from which land is used for MSW purposes	Whether land is available for additional disposal	If yes, Extent of additional land available for disposal (acres)	Whether scientific disposal facilities available	Extent of Scientific disposal site (acres)	Capacity of the landfill site (acres)	Total extent of land available (acres)	Total Extent of land required as per norms (1 acre=10000 sq. ft)	Action taken to acquire additional land	No. of vehicles and equipment						
63	64	65	66	67	68	69	70	71	72	73	No. of Lorry/Min. Loader/Auto	No. of Excavator/cum Loader (JCB)	Dozer	Others	77	78	
2006	"D"	2007	-	-	-	-	100 MT	1.20	1.20	-	2	-	-	-	-	-	

#### IX. CONCLUSION

Human ways of life have placed pressure on the environment and have caused imbalance in the eco systems by the producing, consuming and wasting of natural resources. Most countries evidently have major effects on the environment due to SW generation with economic development since the natural resources are used, and waste and pollution are produced. Therefore, the concern towards the management of solid waste as an integral part for sustainable development has increased.

It is clear that improper waste management practices have a significant impact on the natural environment and sustainable development in the study area. Thus, awareness about SWM impact on sound environmental development or sustainable development in seemingly low. Therefore, it is important that the SWM should be developed from the primary level. Waste storage and primary disposal are the dominant means of managing waste. Thus, it has caused significant challenges in the study area. Therefore, waste separation from the household level, proper storage, more efficient waste collection systems, and sustainable recovery and disposal practices are identified as needed processes in the study area. Considering the nature and components of waste generated by households and business places, the waste reduction, reuse, recycling and composting processes would be more suitable in managing the challenge. These management options should be integrated in a sustainable framework. Adequate consideration should be given to monitoring processes.

Public education and properly planned waste management programs also need to be

introduced into the current waste management system. Especially awareness programmes must be conducted in order to improve the knowledge about the importance of SWM for sound environmental development in the area.

Proper waste disposal is of great importance to both rural and urban areas. Not doing this may bring us to danger in many ways and surely everybody knows this. Time and again, people are always being educated about the importance of waste disposal but then this process should not stop because every now and then, people forget. Some of the kids grow, even if they have learned the proper way of disposing the waste.

We suggest that currently vermicomposting plant is in process in addition to that many flammable materials are to be recycled or by disposed by methods of incineration.

Another suggestion is to make anaerobic digestion plant so that the waste can be effectively utilized and energy is generated in an effective manner.

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