

Solid Waste Management at Chetana H.S. College Campus, Bandra East

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ABSTRACT

As per the mandate of the 74th Constitutional Amendment solid waste management is one of the most crucial aspects of all municipal corporation in India. Presently the daily collected waste post segregation either goes towards land filling, recycling, composting etc. The aim of this study is to understand the solid waste management on a college campus in the Indian metropolitan city of Mumbai with study focus on a college in Bandra's Government colony. The data has been collected through personal interviews with the college house keeping staff.

The paper deals with three sections, first what and how the solid waste management is executed, second, Issues of waste management and third, waste management with respect to Chetana College Campus

Keywords: solid waste management; zero waste campus; recycling; campus

INTRODUCTION

Reduction of solid waste needs proper instructions on waste management practices and unrelenting efforts on part of all students, faculty, and staff. With newer products and packaging material there is a need to promulgate the understanding towards efficient disposal of such waste material. Today in the name of convenience we encourage a 'use and throw' attitude, which we try justify in the name of necessity. Over the years single usage products have been found to be the most convenient choice. The result of this ease emanates in the form of high quantities of waste. The present global scenario requires more consciousness towards the issues surrounding solid waste management and college campuses have a crucial role of enabling students to be thoughtful and attentive with regards to such issues.

KEY ISSUES OF WASTE MANAGEMENT IN INDIA

Waste management rules in India are based on the principles of "sustainable development", "precaution" and "polluter pays" (Lahiry, 2017).

These principles mandate municipalities and commercial establishments to act in an environmentally accountable and responsible manner—restoring balance, if their actions disrupt it. The increase in waste generation as a by-product of economic development has led to various subordinate legislations for regulating the manner of disposal and dealing with generated waste are made under the umbrella law of Environment Protection Act, 1986 (EPA).

With rapid urbanisation, the country is facing massive waste management challenge. Over 377 million urban people live in 7,935 towns and cities and generate 62 million tonnes of municipal solid waste per annum. Only 43 million tonnes (MT) of the waste is collected, 11.9 MT is treated and 31 MT is dumped in landfill sites. Solid Waste Management (SWM) is one among the basic essential services provided by municipal authorities in the country to keep urban centres clean. However, almost all municipal authorities deposit solid waste at a dumpyard within or outside the city haphazardly.

The key to efficient waste management is to ensure proper segregation of waste at source and to ensure that the waste goes through different streams of recycling and resource recovery. In some urban centres, people working in the informal sector the "Bhangarwala" or "Kabadiwala" collect solid waste for each doorstep to get a collection fee and derive additional income from sale of recyclables. The informal recycling industry plays a major role in waste management. It also ensures that less waste reaches landfills.

Installation of waste-to-compost and bio-methanation plants would reduce the load of landfill sites. It is believed that if we segregate biodegradable waste from the rest, it could reduce the challenges by half. E-waste components contain toxic materials and are non-biodegradable which present both occupational and environmental health threats including toxic smoke from recycling processes and leaching from e-waste in landfill into local water tables.

GENERAL CLASSIFICATION OF SOLID WASTE

1. **Municipal waste:** it includes waste resulting from municipal activities and services such as street wastes, dead animals, market wastes and abandoned vehicles. However, the term is commonly applied in a wider sense to incorporate domestic wastes and commercial wastes.
2. **Domestic I Residential Waste:** This category of waste comprises the solid wastes that originate from single and multi-family house hold units. These wastes are generated as a consequence of house hold activities such as cooking, cleaning, repairs, hobbies, redecoration, empty containers packaging, clothing, old books, paper and old furnishings.
3. **Commercial Waste:** Included in this category are solid wastes that originate in offices, wholesale and retail stores, restaurants, hotels, markets, warehouses and other commercial establishments. Some of these wastes are further classified as garbage and others as rubbish.
4. **Garbage:** is the term applied to animal and vegetable waste resulting from the handling, storage, sale, cooking and serving food. Such wastes contain putrescible organic matter, which produces strong odours and therefore attracts rats, flies and other vermin. It requires immediate attention in its storage, handling and disposal.
5. **Rubbish:** is general term applied to solid wastes originating in households, commercial establishments and institutions, excluding garbage & ashes.
6. **Institutional wastes:** are those arising from institutions such as schools, universities, hospitals and research institutes. It includes wastes, which are classified as garbage and rubbish, as well as wastes, which are considered to be hazardous to public health and to the environment.
7. **Ashes:** are the residues from the burning of wood, coal, charcoal, coke and other combustible materials for cooking and heating in houses, institutions and small industrial establishments. When produced in large quantities at power generation plants and factories, these wastes are classified as industrial wastes. Ashes consist of a fine powdery residue, cinders and clinker often mixed with small pieces of metal and glass.

OBJECTIVES

To understand and analyze the criticality of waste management with respect to educational institute specifically Chetana HS College, Bandra East. As a process of research, the paper also compare other institutions which dealing with waste management.

SCOPE OF STUDY

The research paper covers only educational institutions and compares them with Chetana HS College, Bandra East. The paper also highlights the necessity of waste management system and promote Good Solid Waste Management Practices

RESEARCH METHODOLOGY

The research study is descriptive in nature and based on Primary as well as secondary data. The primary data is collected using interview and survey method as the study is based on interviews with the all the college housekeeping staff. Presently there are 19 staff and 2 supervisors who work in two shifts of nine hours each, from this two staff are responsible for campus waste management. and secondary data are collected from various reports on waste management journals, articles and Municipal Corporation of Greater Mumbai web portal.

LITERATURE REVIEW

Several studies have been done with respect to waste management system as a whole, however one of the research has been conducted by MIT Gwalior on Current Practices of Solid Waste Management in MIT's Campus, Gwalior: A Case Study which includes a case study on proper waste management plan on the campus. The paper solely deals with present waste management system and proposed alternative plan although lacked the ACTIVE participations of the Student. (Vijayendra Singh Dangil, May 2017)

Another report from a journal "Science Direct" by S. Lebersorger P. Beigl on Municipal solid waste generation in municipalities: Quantifying impacts of household structure, commercial waste and domestic fuel discusses about identifying and quantifying differences between different municipalities' municipal solid waste (MSW) The resulting regression model included municipal tax revenue per capita, household size and the percentage of buildings with solid fuel heating systems. (P. Beigl, September–October 2011)

One of the study conducted and executed in Chapman University by the way of course work to the students on solid waste management on their campus, wherein a proposal has been design to include good waste management practices in curriculum of the students to make them consciously aware about the importance of waste management in day to day life. (http://chapman)

DISCUSSION AND ANALYSIS

As far as primary data is concern, the paper identified various current practices for solid waste management on campus. The potential source of solid waste on campus is from the various classrooms (through sweeping or de-binning); the yearly outdated files, forms, documents, the examination answer books, vegetative waste from canteen, construction waste from building renovation, outdated electronic hardware etc. Dustbins are placed in classrooms, canteen, washroom and corridors. These bins are emptied daily and the collected waste is disposed in the BMC (Briham Mumbai Municipal Corporation) bin at 3pm. The waste generated from the canteen is put in a compost pit created in a corner of the college ground. The garden waste which includes the plant cuttings, weeds and grass cutting is collected in heaps and then left over to dry and after some time is burnt. The construction and demolition waste is produced whenever some construction and maintenance work is going on. The amount of Construction Demolition waste is less and is also not produced regularly. Scrap waste is sold every year to recover wealth from waste paper, iron, tin, plastic and mild steel.

Some Good Solid Waste Management Practices were also seen in the Campus such as

1. The students are encouraged to showcase their talent by creating artifacts from waste.
2. Each class is encouraged to segregate waste at classroom level for which two bins have been placed in classrooms.
3. Each class is encouraged to reduce the daily amount of waste
4. The students are encouraged to collect plastic material from shops, hotels, and traders around the college vicinity to promote 'reuse, reduce and recycle'. This plastic is later given to an NGO for reuse. Last year the students collected 150 kgs of plastics to mark the 150th Anniversary of Mahatma Gandhi.
5. To further the crusade on reduction of solid waste the admission, the results and other activities are being done online.

CONCLUSION AND RECOMMENDATION

1. The college needs to identify four broad strategies for the three focus areas: (1) Programs and Services, (2) Measuring Results, (3) Facilities and Infrastructure, and (4) Outreach and Education.
2. The college must have a customized syllabus pattern where at least one subject must be paper less including examination of the same
3. Students must be provided with academic credits on the basis of rudimentary ideas of reuse, recycle and renovate
4. The prerequisites for the college is to allocate budget for waste management as sustained measure

5. The paper highly recommend a designated department focusing solely on campus solid waste management

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