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A case study of waste audit in an institution to create waste policy

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Abstract: *A waste audit is an analysis of your facility's waste stream. A waste audit conducted on an Sri Sai Ram Institute of Technology, Chennai has been reviewed and the results are used for making waste management policies in educational institutions. The waste audit was conducted for a week from July 10 – July 17 2017 in the institution with student strength of 2500. Everyday waste was segregated according to various kinds of waste. The average waste of the week was calculated and food waste comprises most of the everyday's waste being 58% in a week's average and plastic waste being 17 % comes second. With the data available from the waste audit a solid waste management system is framed by using recycling techniques and alternative uses. Solid waste management policy can be used to create a zero waste campus.*

Keywords: *institutions, waste policy, waste audit*

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I. Introduction

Waste Audit can help us identify what types of recyclable materials and waste our facility generates and how much of each category is recovered for recycling or discarded. Using the data collected, our organization can identify the feasibility of enhancing its recycling efforts and the potential for cost savings. Government of India introduced Swachhta ranking in the year 2017 to increase the waste management awareness in educational institutions. In order to create a zero waste campus, a waste audit has been conducted to analyze the amount and types of waste generated in the college. This paper reviews the waste audit and focuses on framing solid waste policies.

The primary objectives of the waste audit are 1). To categorically and quantitatively identify the waste. 2). To create awareness among the student community regarding the waste they generate. 3). To synthesize a list of recycling ideas to reduce waste. The reduction of waste by weight would be achieved through the recylcing of organic material. (Melissa A. J. Felder,2001). The amount, nature and composition of the waste generated in all functional areas of the entity; • How the waste is produced, including relevant management decisions and policies; • How the waste is managed; and • The extent to which materials or products used or sold consist of recycled or reused materials or products. [1]

II. Waste Audit Methodology

The waste audit was conducted on July 17, 2017 at our campus. The campus houses 2500 plus students and faculties. Waste Audit team involved four staff members and 60 eco-club members. The materials used were 30 large garbage bags, rubber gloves, disposable gloves and weighing machine to weigh the trash collected.

Our campus is a G+ 3 building with floor area of 45,000 sqft. The trash from classrooms, staffrooms, labs and other common areas inside campus are collected on a daily basis by the cleaning staff of our college and stored in the common bins placed in each floor. Each Floor has four large trash bins for storing the waste from classrooms, labs etc. The common bins are emptied on a weekly basis. Therefore the waste collected from the campus classrooms from July 10, 2017 to July 16, 2017 was stored in the 16 large trash bins. The audit team's goal was to collect the entire week's waste from the common trash bins stored in each floor and also the classroom waste from each floor generated on the waste audit day. The canteen and mess waste was collected on the audit day too. Waste Audit began with a instructions session by staff members.

2.1 Material Planning

The materials needed for waste audit is listed out and made ready well in advance. Size of the audit is moderate. Safety gears like rubber gloves and face mask are used. Students are grouped into various teams. Student teams were sent to each and every classroom. Curb side collection is used in solid waste management of municipalities around the world. Waste Collection has happened like curb side collection. A place to sort out

different kinds of waste is cleared and various boxes are kept ready to hold the waste. A weighing scale is used for quantifying the garbage.

Fig 1: waste audit methodology flow chart

2.2 Sorting out waste

Waste collected was sorted into different categories as follows: Food waste, Paper waste, Plastic Waste, Tetra packs/Tea Cups waste, Metal Waste, Glass Waste, E-Waste. Different types of wastes were bagged and weighed separately.

III. Results

The data was collected and analyzed to find out the type of waste which is predominant in the institution. The collected data is as follows

TABLE: Type and Quantity of Waste

S.No	Type of waste	Weight (kg)
1.	Food waste	23.05
2.	Paper Waste	2.79
3.	Plastic waste	6.96
4.	Tetra pack/Tea cup	1.2
5.	Metal	4.3
6.	Glass	0.9
7.	Yard	0.6
8.	E-Waste	-
TOTAL		39.8

It has been noted that most of the waste generated in our waste is recyclable. The major contributor is food waste being 58% which could be composted or used as feed for livestock. Plastic waste comes second with 17%

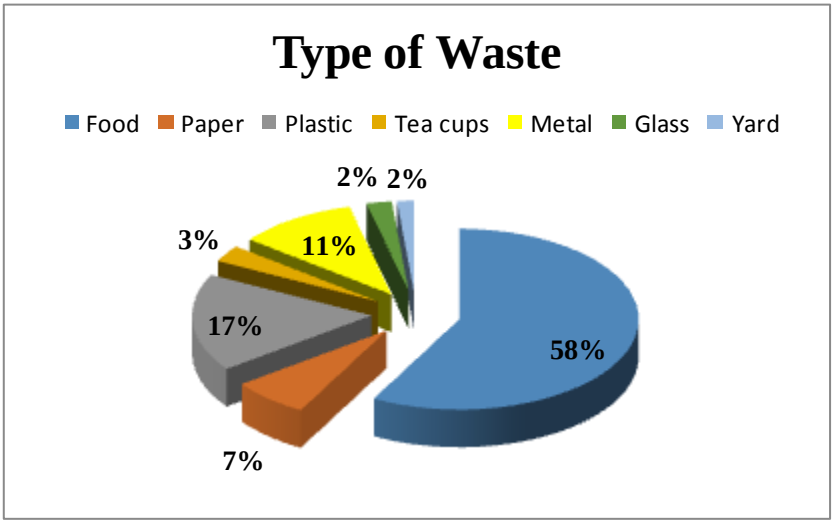

Fig 2: Pie Chart of Waste in percentage

IV. Conclusion

It has been noted that most of the waste generated in our waste is recyclable. The major waste inside campus is food waste which is 58%. Food waste can be recycled using composting methods or food wastes can be utilised for bio gas energy production using a bio-gas plant. Paper waste and metal waste can be sold for recycling firms. Food waste can be recycled inside campus using composting by constructing composting pits inside college. Manure taken from composting pits can be used for maintaining the trees inside the campus. The cause of excess food wastage should be studied separately and measures should be taken to restrict food wastage. The results indicate a need to reduce our plastic usage. Plastic with thickness more than 20 microns can't be recycled. Educational institutions could impose a ban on plastic bags to contain daily plastic wastage. Educational Institutions can have tie-ups with recycling firms and NGOs which recycle tetra packs, tea packs and plastics to create a zero waste campus.

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