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1. INTRODUCTION

Wastes are unused by-products that can be formed through different activities in our daily life. Waste is a significant global issue. Increasing volumes of waste are being generated as the global population and living standards rise. The environmental impact is significant, with massive volumes of waste generated annually with only basic or little treatment to minimize its impact. Wastes may be classified into different categories depending on their source, structure, adverse effect, etc. In the educational institute different kinds of wastes like are E-waste, plastic wastes, chemical waste, solid wastes, liquid wastes, biodegradable wastes, etc. are produced which are intended to be disposed of or are required to be disposed of.

A waste audit is a method for assessing the waste generated by the organization to determine the types, sources, and amounts of wastes produced within the timeframe. Apart from this, the audit examines the current waste reduction practices and evaluates its effectiveness. In short this kind of appraisal will provide baseline data to determine priorities that suits the organization's needs and establish waste reduction recommendations or advocate modifications to existing waste management activities which ultimately contribute towards sustainability.

Pollution from garbage causes a lot of litter in our neighbor hoods, which can have a negative impact on our health and is unsightly. Birds and other animals can be seriously injured by plastic bags, abandoned ropes, and strings. This indicator covers trash generation and disposal, recycling, and wastes of plastic, paper, and food. General garbage and hazardous waste are the two categories into which solid waste can be separated. Garbage, paper, cans, and glass bottles are examples of general wastes. These items are typically thrown away in households as well as educational institutions. Waste that poses a risk to human health or the environment, such as gasoline and cleaning products, is referred to as hazardous waste. Unscientific landfills may contain dangerous chemicals that seep into the ground and water systems and contribute to the global greenhouse effect and climate change.

Additionally, solid trash frequently contains unused materials that may be recycled, repaired, or reused to provide better services. Therefore, a sustainable college/institute must reduce its solid waste output. The auditor diagnoses the current waste disposal practices and makes recommendations for the most effective solutions to the issues. The organization must consequently collect its garbage's from various place and dispose it off in a proper manner.

2. OBJECTIVES

- To document the status of solid and liquid waste generated in the campus.
- To review the prevailing waste disposal methods, healthy practices and suggest measures to improve the existing waste management strategies.

3. METHODOLOGY

Data collection was performed through frequent field visits, direct observations, and assessments as well as communication with responsible persons. Information about waste generation was collected from each department based on questionnaire based survey, it has been carried out by students of Environmental Science Department with the guidance of teachers. College house keeping staff helped set up the waste audit in the entire campus. Besides, information were also collected using well devised data sheets and also from institutional report.

4. TYPES OF WASTE GENERATED

Different types of waste generated in the college campus from various places. The waste generated is verified on the dates of audit generating from various places. The various waste generated are biodegradable, non-biodegradable, bio-medical, E-waste, Chemical/Hazardous waste etc. The campus generates at least no/ very less plastic waste as university management has already adopted the policy of plastic free campus.

Total Stakeholders – 1500

Quantity of waste generated

- ❖ Biodegradable – 3 kg/day (office)
- ❖ Non-biodegradable – 2 kg/day (office)
- ❖ Biodegradable – 2 kg/day (labs)
- ❖ Non-biodegradable – ½ kg/day (including glass bottles)
- ❖ Hazardous waste – ¼ kg/day

Canteen waste

- ❖ Biodegradable college canteen – 8 kg/day
- ❖ Non-biodegradable – 2½ kg/day

Different kinds of waste are generated from the different structures of the college. The quality and quantity of the wastes are primarily controlled by the source of their generation. Wastes

generated from this college with a huge number of students along with a significant number of teaching and non-teaching staff are required to manage with proper strategies. The amount of e-waste, plastic waste, solid waste, chemical waste, paper waste, biomedical waste, garden waste, and hazardous waste was found to be generated more than 3000 kg per year. The chemical waste generated on the campus through science laboratories is in both solid form and liquid form. Usually, there is a practice in the laboratories to store these hazardous chemicals in containers and cans for safe disposal. E-waste generated in the institute is handled, treated, and disposed of scientifically. The generation of solid waste per year was comparatively more than 2000 kg. Plastic waste, E-waste, biomedical waste, and chemical wastes are collected by the municipality and finally disposed of at the municipal waste disposal site. Solid wastes are stored in the septic tank and are collected by the municipality at regular intervals. Wastewater from the master pit is released directly into the municipal drainage canal.

Table: 01: Sources and Quantity of solid wastes (Kg/Year)

Location	Paper	Plastic	Glass	Food	E-waste	Hazardous waste	Bio medical	Total (Kg/year)
Botany	10	16	9	110	20	-	-	
Chemistry	16	16	20	150	30	2	-	
Commerce	9	19	2	160	20	-	-	
Economics	6	17	5	100	10	-	-	
English	9	20	5	120	15	-	-	
Environmental Science	15	25	20	50	20	2	1	
Physics	10	14	7	100	25	-	-	
Physical Education	5	10	2	5	10	-	1	
Politics	9	12	5	90	25	-	-	
Malayalam	10	15	5	80	20	-	-	
Mathematics	13	20	10	100	30	-	-	
Syriac	5	8	2	6	10	-	-	
Zoology	15	10	10	50	30	-	-	
Office	30	25	5	50	150			
Library	50	30	5	8	50	-	-	
WDC	20	25	1	100	-	-	1	
Canteen	50	60	20	250	10			
TOTAL (Kg/Year)	282	342	133	1259	475	4	3	2771

Within the college campus, there is excellent management of generated waste was observed. The authority may provide excellent educational opportunities for creating awareness about waste and its management. Waste reduction initiatives can save natural resources, energy, and landfill space. Reducing, reusing, recycling and waste material will improve the economic and environmental performance of the college. Composting of biodegradable waste can be used as fertilizer for gardening in the college. Future plans for recycling and reusing waste material should be kept in mind for a better environmental position.

5. HEALTHY WASTE MANAGEMENT PRACTICES

- The segregation of waste is the most important component of any type of waste management system. For this purpose, color-coded bins have been introduced in the college campus for the segregation of waste after generation. Green-colored bins are meant for wet and biodegradable wastes (for example kitchen waste, vegetables, and fruit skins). Blue-colored bins are meant for the disposal of plastic and other non-biodegradable wastes. Cleaning and emptying of the dustbins are being done on a regular basis.
- Biopots are installed in the college to collect food waste and make it into manure/compost.
- The campus has efficient mechanisms for collecting and treating both solid and liquid wastes. A proper segregation of waste into biodegradable and non-biodegradable categories is practiced in the campus.
- It is revealed that the major solid wastes generated in the campus falls under nine categories that include paper, plastic, glass, damaged furniture, biodegradable waste (food, sweeping waste, crop waste etc.), construction and demolition waste, biomedical waste, e-waste and others
- Paperless culture is encouraged in the campus by the use of digital platforms for communication, e- filing, administration, class lectures etc.
- A public address system is used for general communications.
- Most of the paper wastes are given to the scrap dealers for recycling and rest are being deposited in landfill or burned in incinerator.
- Use of single use plastic is strictly banned in the campus which results in the reduction of plastic waste to considerable amount.
- Plastic wastes further generated are collected and stacked in designated places from where it is disposed through vendors.

- The college employs adequate number of support staff for the collection, segregation and disposal of waste on campus and the same is done without compromising the sanitation and hygiene protocols.
- Solid waste is segregated at source and for that a large number of waste bins are provided in the campus.
- Solid waste is segregated at source, for that several dust bins are placed in each building of the campus from where housekeeping staffs take the wastes regularly.
- Toilets of girls are provided with napkin vending machines and waste bins are cleared on daily basis by hygiene staff. Incinerators are installed in the campus to dispose sanitary napkins and biomedical needles.
- Liquid waste on campus comprises mainly of the waste water from the canteens, toilets, laboratories etc.
- The liquid wastes from laboratory, bathrooms, toilets, canteens etc. Are effectively managed in the campus. It is being collected and disposed properly by flowing it to safely built pits.
- Exhaust fans are fixed in the labs to expel hazardous vapours if any, produced there.
- E- wastes that are beyond repair are collected systematically and sold out to vendors on annual basis.
- Though not regular, bio-degradable waste is used for vermi-composting
- Various programmes like paper bag making programme, cloth bag distribution, educational talks etc. Were conducted to give awareness on the dangerous impacts of plastic.
- The use of steel plates and glasses for dining purpose is encouraged in the campus
- Execution of various green initiatives (cleaning drives) conducted within the campus to clean environment.
- The formation of different clubs like ‘Green Army’ that address the problem of plastic waste and ‘Bhoomithrasena’ which helps in strengthening the commitments of the students towards environmental protection are the other major highlights of the campus.

6. RECOMMENDATIONS

1. Periodic appraisal of different kinds of waste and its quantified data are required for the effective waste management in the campus.
2. A waste management committee should be established for the proper monitoring of waste management activities in the campus.

3. Construction and Demolition waste can be handed over to merchants for reuse of the materials
4. Organic manure produced from the biogas and vermi compost should be effectively used for farming and horticulture.
5. Proper maintenance of biogas unit and incinerators is essential for the better waste management programmes in the campus.
6. Effective implementation of green protocols in the campus.

6. CONCLUSION

The current evaluation provides a glimpse on the waste and its management in the campus. The general observations in the report serve as an opportunity for improving the waste management strategies in the campus. The recommendations that are highlighted may lead to a prosperous future in the context of green campus and thus in sustainable environment and community development.