

# Waste Management In Viva Institute of Technology Using Various Techniques

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**Abstract**—The growth in intake of students, constants change in consumption pattern and social behavior has increased the generation of waste management in VIT campus. Though waste management is a worldwide phenomenon, the improper management of waste management causes hazards to the inhabitants. The problem of waste management is prevailing in the academic environment of the VIT campus also. Consequently, there is need for improve planning and implementation of effective waste management systems for sustainable environmental scenario of the campus. It requires detailed information on the quantity and character of waste management generated and their physical and chemical properties. This present study is to investigate the problems and prospects of waste management in the campus. The investigation includes the methods of practices associated with sources, quantity generated, collection, reuse, recycle, storage of waste in the VIT campus. In this work, it is intended to collect the data using a questionnaire, field visits, and interaction with inhabitants. This work will evolve an appropriate waste management strategy based on the principles of reuse and recycle. This work will be a feasibility study for a waste management system for the campus.

**Keywords**—Organic, Plastic, Recycle, Reuse, Waste Management.

## I. INTRODUCTION

VIT is providing technical education for graduate students in engineering. Instead of allthese advance technology in educational fields it faces severe environmental concerns whichneeds to be resolved. At the start of the 20th century the industrial companies saw the increment in consumers.The earth itself becamemore polluted with the generation of non-biodegradable waste. The increase in population andurbanization was also responsible for increase in waste. Solid waste is no longer desired material which is generated from household, industries, agriculture and commercial.The introduction of the paper should explain the nature of difficulty, multiple work, aim , and the contribution of the paper.

Tetra pack cartons are primarily made from papers. 75% of tetra pack carton is made frompaperboard, 20% of polyethylene and 5% of aluminium . Tetra pack cartons are fully recyclable.The paperboard is recycled into panel boards, roof sheets and so on.Waste management and recycling collection can help to conserve our planet natural beautywhich can be flawed by thoughtless disposal of waste and senseless littering. It is also blightfor those who live in areas where waste collection recycling is not managed effectively andresponsibly.

## II. OBJECTIVES

2.1 For proper waste management is to protect the environment and for the health and safetyof the population. To reduce quantity of waste of 3 R's.

2.2 Identifying the barriers for reducing plastic waste and here by stimulating preventionand recycling of plastic waste. Diverting plastic waste from residual waste going toincineration and landfill.

2.3 To reduce high rate of plastic pollution and reprocessing the materials into functionaland useful products. This approach helps to conserve resources and divert plastic fromdestination such as oceans.

2.4 To reduce bio degradable waste and to produce as a soil conditioner. It is used in garden horticulture, urban agriculture and organic farming.

2.5 To transform biodegradable organic matter into biologically stable material thereby reducing the original volume of the waste.

2.6 To produce a product that can be used to support a plant growth and as a soil amendment as fertilizer and soil conditioner.

### III. MATERIAL AND METHOD

For proper waste management segregation of waste is required as per their physical and chemical properties. Composting can be done various methods like aerobic composting, anaerobic composting, vermicomposting. Organic waste generated in college campus we are adopting aerobic organic composting, which is mainly dependent on the amount of oxygen. Some factors are important while composting such as temperature, moisture content, carbon-nitrogen ratio.



**Fig.3.1: Composting materials**



**Fig.3.2: Composting pot**

Plastic bottles, plastic wrappers, and other plastic material can be recycled by different methods such as making plastic beads, for making plastic pavers blocks recycle of plastic material into another material, etc. We are reusing this waste plastic bottles for casting concrete cubes. For making this cubes plastic bottles are filled with other plastic material, and these bottles are placed in concrete mold and after that concrete mix is poured into the mold, M25 grade of concrete mix is used for making cubes, using this plastic waste generated in college campus reduce the amount of concrete per  $m^3$ .



**Fig.3.3: segregation of plastic waste**



**Fig.3.4: bottle filling with plastic**



Fig.3.5: plastic filled bottles

Table 3.1 : Materials used for casting cubes :-

Sr. No.	Ingredients	SSD mix (per m <sup>3</sup> ) in kg	Batch (for 9 cubes)
01.	Cement	299	13.455
02.	Flyash	84	3.780.
03.	10 mm aggregate	470	21.167
04.	20mm aggregate	610	27.093
05.	Sand	853	36.658
06.	Water	161	9.717
07.	Admixture	4.21	0.172

TM 25 (NORMAL)									
NORMAL									
Height	300 mm	CONNECTED	41.25	MIX PROPORTION			DATE: 4/10/20		
100	200	200	11.25						
150	80	80	5.00	WATER ABSORPTION	MOISTURE CONTENT				
200	0	0	0.00						
250	470	470	21.167	30 MM	1.00	10 MM	0.00		
300	610	610	27.093	20 MM	1.30	10 MM	0.00		
350	853	853	36.658	C/S	0.70	C/S	0.00		
400	0	0	0.00	W/S	0.00	W/S	0.00		
450	161	161	9.717	W/S	0.00	W/S	0.00		
500	4.21	4.21	0.172	WATER ABSORPTION	MOISTURE CONTENT				
550	0	0	0.00						
BATCH WEIGHTS									
2000	299	112.50	30 MM	0.62	0.00	10 MM	0		
			20 MM	0.84	0.00	10 MM	0		
			10 MM	0.00	0.00	0.00	0		
			WATER	0.16	0.00	0.00	0		
			AD MIX	0.00	0.00	0.00	0		
			W/S	0.00	0.00	0.00	0		
			W/S	0.00	0.00	0.00	0		
OBSERVATIONS									
Sieve Analysis									
200	299	112.50	30 MM	0.62	0.00	10 MM	0		
300	610	270.93	20 MM	0.84	0.00	10 MM	0		
400	853	366.58	10 MM	0.00	0.00	0.00	0		
500	161	97.17	W/S	0.00	0.00	0.00	0		
600	4.21	0.172	AD MIX	0.00	0.00	0.00	0		
700	0	0	W/S	0.00	0.00	0.00	0		
COMPRESSION STRENGTH									
200	299	112.50	30 MM	0.62	0.00	10 MM	0		
300	610	270.93	20 MM	0.84	0.00	10 MM	0		
400	853	366.58	10 MM	0.00	0.00	0.00	0		
500	161	97.17	W/S	0.00	0.00	0.00	0		
600	4.21	0.172	AD MIX	0.00	0.00	0.00	0		
700	0	0	W/S	0.00	0.00	0.00	0		
PREPARED BY: [Signature]									

Fig. 3.6 Result of standard cube

TM 25 (A2)									
STANDARD REPLACING OF GLASS BOTTLES FILLED WITH PLASTIC									
Height	300 mm	CONNECTED	41.25	MIX PROPORTION			DATE: 4/10/20		
100	200	200	11.25						
150	80	80	5.00	WATER ABSORPTION	MOISTURE CONTENT				
200	0	0	0.00						
250	470	470	21.167	30 MM	1.00	10 MM	0.00		
300	610	610	27.093	20 MM	1.30	10 MM	0.00		
350	853	853	36.658	C/S	0.70	C/S	0.00		
400	0	0	0.00	W/S	0.00	W/S	0.00		
450	161	161	9.717	W/S	0.00	W/S	0.00		
500	4.21	4.21	0.172	WATER ABSORPTION	MOISTURE CONTENT				
550	0	0	0.00						
BATCH WEIGHTS									
2000	299	112.50	30 MM	0.62	0.00	10 MM	0		
			20 MM	0.84	0.00	10 MM	0		
			10 MM	0.00	0.00	0.00	0		
			WATER	0.16	0.00	0.00	0		
			AD MIX	0.00	0.00	0.00	0		
			W/S	0.00	0.00	0.00	0		
			W/S	0.00	0.00	0.00	0		
OBSERVATIONS									
Sieve Analysis									
200	299	112.50	30 MM	0.62	0.00	10 MM	0		
300	610	270.93	20 MM	0.84	0.00	10 MM	0		
400	853	366.58	10 MM	0.00	0.00	0.00	0		
500	161	97.17	W/S	0.00	0.00	0.00	0		
600	4.21	0.172	AD MIX	0.00	0.00	0.00	0		
700	0	0	W/S	0.00	0.00	0.00	0		
COMPRESSION STRENGTH									
200	299	112.50	30 MM	0.62	0.00	10 MM	0		
300	610	270.93	20 MM	0.84	0.00	10 MM	0		
400	853	366.58	10 MM	0.00	0.00	0.00	0		
500	161	97.17	W/S	0.00	0.00	0.00	0		
600	4.21	0.172	AD MIX	0.00	0.00	0.00	0		
700	0	0	W/S	0.00	0.00	0.00	0		
PREPARED BY: [Signature]									

Fig. 3.7 Result of cube filled with plastic

WATER ANALYSIS									
WATER CHARACTERISTICS									
DATE	TIME	TEMPERATURE	PH	TURBIDITY	TOTAL SOLIDS	DISSOLVED SOLIDS	CALCIUM	MAGNESIUM	HARDNESS
01/03/20	10:00	28.5	7.2	1.5	150	100	100	50	150
02/03/20	11:00	29.0	7.1	1.6	155	105	105	55	160
03/03/20	12:00	28.8	7.3	1.4	148	98	98	48	146
04/03/20	13:00	29.2	7.0	1.7	160	110	110	60	170
05/03/20	14:00	28.9	7.2	1.5	152	102	102	52	154
06/03/20	15:00	29.1	7.1	1.6	158	108	108	58	166
07/03/20	16:00	28.7	7.3	1.4	145	95	95	45	140
08/03/20	17:00	29.3	7.0	1.8	165	115	115	65	175
09/03/20	18:00	28.6	7.4	1.3	142	92	92	42	138
10/03/20	19:00	29.4	6.9	1.9	170	120	120	70	180
11/03/20	20:00	28.4	7.5	1.2	140	90	90	40	136
12/03/20	21:00	29.5	6.8	2.0	175	125	125	75	185
13/03/20	22:00	28.3	7.6	1.1	135	85	85	35	132
14/03/20	23:00	29.6	6.7	2.1	180	130	130	80	190
15/03/20	00:00	28.2	7.7	1.0	130	80	80	30	128
16/03/20	01:00	29.7	6.6	2.2	185	135	135	85	195
17/03/20	02:00	28.1	7.8	0.9	125	75	75	25	124
18/03/20	03:00	29.8	6.5	2.3	190	140	140	90	200
19/03/20	04:00	28.0	7.9	0.8	120	70	70	20	120
20/03/20	05:00	29.9	6.4	2.4	195	145	145	95	205
21/03/20	06:00	27.9	8.0	0.7	115	65	65	15	116
22/03/20	07:00	30.0	6.3	2.5	200	150	150	100	210
23/03/20	08:00	27.8	8.1	0.6	110	60	60	10	110
24/03/20	09:00	30.1	6.2	2.6	205	155	155	105	215
25/03/20	10:00	27.7	8.2	0.5	105	55	55	5	106
26/03/20	11:00	30.2	6.1	2.7	210	160	160	110	220
27/03/20	12:00	27.6	8.3	0.4	100	50	50	0	100
28/03/20	13:00	30.3	6.0	2.8	215	165	165	115	225
29/03/20	14:00	27.5	8.4	0.3	95	45	45	0	96
30/03/20	15:00	30.4	5.9	2.9	220	170	170	120	230
31/03/20	16:00	27.4	8.5	0.2	90	40	40	0	90
01/04/20	17:00	30.5	5.8	3.0	225	175	175	125	235
02/04/20	18:00	27.3	8.6	0.1	85	35	35	0	86
03/04/20	19:00	30.6	5.7	3.1	230	180	180	130	240
04/04/20	20:00	27.2	8.7	0.0	80	30	30	0	80
05/04/20	21:00	30.7	5.6	3.2	235	185	185	135	245
06/04/20	22:00	27.1	8.8	0.0	75	25	25	0	76
07/04/20	23:00	30.8	5.5	3.3	240	190	190	140	250
08/04/20	00:00	27.0	8.9	0.0	70	20	20	0	70
09/04/20	01:00	30.9	5.4	3.4	245	195	195	145	255
10/04/20	02:00	26.9	9.0	0.0	65	15	15	0	66
11/04/20	03:00	31.0	5.3	3.5	250	200	200	150	260
12/04/20	04:00	26.8	9.1	0.0	60	10	10	0	60
13/04/20	05:00	31.1	5.2	3.6	255	205	205	155	265
14/04/20	06:00	26.7	9.2	0.0	55	5	5	0	56
15/04/20	07:00	31.2	5.1	3.7	260	210	210	160	270
16/04/20	08:00	26.6	9.3	0.0	50	0	0	0	50
17/04/20	09:00	31.3	5.0	3.8	265	215	215	165	275
18/04/20	10:00	26.5	9.4	0.0	45	0	0	0	45
19/04/20	11:00	31.4	4.9	3.9	270	220	220	170	280
20/04/20	12:00	26.4	9.5	0.0	40	0	0	0	40
21/04/20	13:00	31.5	4.8	4.0	275	225	225	175	285
22/04/20	14:00	26.3	9.6	0.0	35	0	0	0	35
23/04/20	15:00	31.6	4.7	4.1	280	230	230	180	290
24/04/20	16:00	26.2	9.7	0.0	30	0	0	0	30
25/04/20	17:00	31.7	4.6	4.2	285	235	235	185	295
26/04/20	18:00	26.1	9.8	0.0	25	0	0	0	25
27/04/20	19:00	31.8	4.5	4.3	290	240	240	190	300
28/04/20	20:00	26.0	9.9	0.0	20	0	0	0	20
29/04/20	21:00	31.9	4.4	4.4	295	245	245	195	305
30/04/20	22:00	25.9	10.0	0.0	15	0	0	0	15
01/05/20	23:00	32.0	4.3	4.5	300	250	250	200	310
02/05/20	00:00	25.8	10.1	0.0	10	0	0	0	10
03/05/20	01:00	32.1	4.2	4.6	305	255	255	205	315
04/05/20	02:00	25.7	10.2	0.0	5	0	0	0	5
05/05/20	03:00	32.2	4.1	4.7	310	260	260	210	320
06/05/20	04:00	25.6	10.3	0.0	0	0	0	0	0
07/05/20	05:00	32.3	4.0	4.8	315	265	265	215	325
08/05/20	06:00	25.5	10.4	0.0	0	0	0	0	0
09/05/20	07:00	32.4	3.9	4.9	320	270	270	220	330
10/05/20	08:00	25.4	10.5	0.0	0	0	0	0	0
11/05/20	09:00	32.5	3.8	5.0	325	275	275	225	335
12/05/20	10:00	25.3	10.6	0.0	0	0	0	0	0
13/05/20	11:00	32.6	3.7	5.1	330	280	280	230	340
14/05/20	12:00	25.2	10.7	0.0	0	0	0	0	0
15/05/20	13:00	32.7	3.6	5.2	335	285	285	235	345
16/05/20	14:00	25.1	10.8	0.0	0	0	0	0	0
17/05/20	15:00	32.8	3.5	5.3	340	290	290	240	350
18/05/20	16:00	25.0	10.9	0.0	0	0	0	0	0
19/05/20	17:00	32.9	3.4	5.4	345	295	295	245	355
20/05/20	18:00	24.9	11.0	0.0	0	0	0	0	0
21/05/20	19:00	33.0	3.3	5.5	350	300	300	250	360
22/05/20	20:00	24.8	11.1	0.0	0	0	0	0	0
23/05/20	21:00	33.1	3.2	5.6	355	305	305	255	365
24/05/20	22:00	24.7	11.2	0.0	0	0	0	0	0
25/05/20	23:00	33.2	3.1	5.7	360	310	310	260	370
26/05/20	00:00	24.6	11.3	0.0	0	0	0	0	0
27/05/20	01:00	33.3	3.0	5.8	365	315	315	265	375
28/05/20	02:00	24.5	11.4	0.0	0	0	0	0	0
29/05/20	03:00	33.4	2.9	5.9	370	320	320	270	380
30/05/20	04:00	24.4	11.5	0.0	0	0	0	0	0
31/05/20	05:00	33.5	2.8	6.0	375	325	325	275	385
01/06/20	06:00	24.3	11.6	0.0	0	0	0	0	0
02/06/20	07:00	33.6	2.7	6.1	380	330	330	280	390
03/06/20	08:00	24.2	11.7	0.0	0	0	0	0	0
04/06/20	09:00	33.7	2.6	6.2	385	335	335	285	395
05/06/20	10:00	24.1	11.8	0.0	0	0	0	0	0
06/06/20	11:00	33.8	2.5	6.3	390	340	340	290	400
07/06/20	12:00	24.0	11.9	0.0	0	0	0	0	0
08/06/20	13:00	33.9	2.4	6.4	395	345	345	295	405
09/06/20	14:00	23.9	12.0	0.0	0	0	0	0	0
10/06/20	15:00	34.0	2.3	6.5	400	350	350	300	410
11/06/20	16:00	23.8	12.1	0.0	0	0	0	0	0
12/06/20	17:00	34.1	2.2	6.6	405	355	355	305	415
13/06/20	18:00	23.7	12.2	0.0	0	0	0	0	0
14/06/20	19:00	34.2	2.1	6.7	410	360	360	310	420
15/06/20	20:00	23.6	12.3	0.0	0	0	0	0	0
16/06/20	21:00	34.3	2.0	6.8	415	365	365	315	425
17/06/20	22:00	23.5	12.4	0.0	0	0	0	0	0
18/06/20	23:00	34.4	1.9	6.9	420	370	370	320	430
19/06/20	00:00	23.4	12.5	0.0	0	0	0	0	0
20/06/20	01:00	34.5	1.8	7.0	425	375	375	325	435
21/06/20	02:00	23.3	12.6	0.0	0	0	0	0	0
22/06/20	03:00	34.6	1.7	7.1	430	380	380	330	440
23/06/20	04:00	23.2	12.7	0.0	0	0	0	0	0
24/06/20	05:00	34.7	1.6	7.2	435	385	385	335	445
25/06/20	06:00	23.1	12.8	0.0	0</				