

17.3.12 a – Progress against SDG12 – Consumption and Production (Waste Management System)



WASTE MANAGEMENT PRACTICES

	to manage the different types of waste generated in the campus. The waste
	management includes
	Solid waste management
	Liquid waste management
	E-waste management
00110	WAGTE MANAGEMENT
SOLID	WASTE MANAGEMENT
	B.S. Abdur Rahman Crescent Institute of Science and Technology is committed
	to ensure that the built infrastructure of the institute has sustainability as a core
	principle in maintenancemanagement of the campus.
	Estate office aspires to follow a range of sustainable design features and
	practices implemented to build and maintain the institute as a complete green
	and sustainable campuscontinuously.
	The solid waste management is practiced to safely dispose the waste generated
	at the campus by way of segregating the waste as organic waste, recyclable
	waste and inert wasteand processing the waste thus segregated.
	Implementation of solid waste management inside the campus is outsourced to
	GREEN SERVICES TRUST and an average of Rs. 24.0 lakhs per annum is
	spend towards salary forthe staffs.
	Every year our institute contributes waste papers towards national recycling
	initiative organized by ITC Ltd (paper boards & specialty paper division) which is
	equivalent to saving750 trees on an average.
	Our Institute received certificate of Appreciation from Green Services Trust for
	partnering in implementing solid waste management project in the campus in an
	environment friendly manner and diverted 1,44,655 Kg of waste from landfill to
	recycling during the year 2017- 2018.

□ B.S. Abdur Rahman Crescent Institute of Science and Technology takes initiatives



WASTE QUANTIFICATION DATA - FROM 2016 TO 2020:

□ Total Waste Collected:	10,34,971 Kgs.
☐ Total Organic waste:	4,53,949 Kgs.
☐ Total Recyclable waste:	2,15,496 Kgs.
☐ Total Inert waste:	3,65,524 Kgs.

ACTIVITIES CARRIED OUT

Two bins system is followed for waste collection one for organic and one for recyclables.
Collection of waste from the campus is done through a tractor and with the
support of six-man power.
The collected segregated waste will be unloaded at the waste processing yard
and processedthrough 15 staff called as 'Green friends'.
The waste generated at the campus will be processing as per SWM Rules 2016
Bio-degradable waste is composted under windrow composing method.
Recyclable waste is further segregated and disposed through vendors on need basis.
Sanitary napkins waste is safely disposed using an incinerator fitted with wet
scrubber for pollution control
Food waste is fed in the bio gas plant and the gas is utilized for cooking purpose
in the canteen
E-waste and hazardous waste is handed over to the authorized processors and
certificate ofdestruction as per norms is obtained from the processor.
15 Green Friends (persons engaged for waste processing) engaged to carry out
above mentioned work. 2 Supervisory staff also been engaged for coordination
and awareness creation activity at the campus and 6 green friends are engaged
for waste collection and maintenance of bio gas plant.
Different types of Solid waste management Training and Awareness program
conducted to college students, staff, Housekeeping workers, security and green
friends.
The harvested bio compost will be given to the estate office every month, nearly
2000kgs, for garden use
Every month around 4000kg of recyclable waste is removed from waste yard for process.



LIQUID WASTE MANAGEMENT

The University takes sufficient measures to treat the wastewater generated
within the premises and it ensures that the treated water is reused within the
campus. Estate office has established suitable and sustainable sewage
treatment plants with the design features to completely treat the wastewater
generated in the university.
2 nos. of Sewage treatment plants of 250KLD capacity are available, one for
Men's Hostel and one for Institute campus.
The sewage generated in the University is generally characterized by the
presence of organic, inorganic and suspended solids.
The chain of treatment is aimed to remove such pollutants from the wastewater
so that it canbe effectively reused.
The treatment system consists of preliminary treatment system followed by the
primary and secondary treatment process.
The preliminary treatment system aims the removal of floating bodies and grits
from the waste water. Bar Screens are used in the treatment plant to remove
materials like plastics and other floating objects.
The grit chambers are used to remove sand and silts from the wastewater.
The primary sedimentation tank helps in the removal of the suspended solids.
The biological treatment system is the secondary treatment process used in the
removal oforganics from the wastewater
The suspended solids are removed using the primary sedimentation tank and
after this thewastewater is subjected to biological treatment to remove the
organic content from the waste.
The secondary treatment process is incorporated with ECO-BIO BLOCK so as
to increasethe efficiency of the treatment system.
The Eco-Bio Bricks helps in the attachment of bacteria in the treatment system
and helps inthe better removal of organic content from the wastewater.
This attached system will also help the treatment system to handle shock
loadings if there isan increase in the organic loading rate in the biological
treatment system.
The sewage treatment plant is working on the principle of attached growth
aerobic system(Eco-Bio Block) followed by sand filter and carbon filter.
The carbon and sand filter ensures that any amount of organics that is left in the



collection tank.
The entire Sewage Treatment Plant is periodically subjected to maintenance regularly.
The working of all the pumps and valves are checked periodically to ensure
the smoothfunctioning of the sewage treatment plant.
The treated water is used for landscaping and toilet flushing purpose.
This helps the university to reduce its dependency of fresh water from wells for gardening.
The physical, chemical and biological characteristics of the treated water are
tested to ensurethe efficiency of the treatment systems.
Some of the important parameters checked include pH, solids, Chemical
oxygen demand, Biochemical oxygen demand, Nitrates, chlorides etc.
The treated wastewater is checked periodically to ensure its quality so
that it can beeffectively reused for gardening and as well for the toilet flushing.

wastewater is suitably adsorbed from the wastewater and it is stored in the

E-WASTE MANAGEMENT

- The institute takes sufficient measures to dispose the e-waste generated inside the campusproperly.
- Our Institute also takes initiatives to reduce the generation of e-waste in the campus
- All obsolete electrical and electronic waste is disposed as e-waste to vendors for proper destruction without damaging the environment and certificate for such destruction and disposal are obtained.
- Electronic waste that are disposed includes
- Old TVs, computer monitors, printers, scanners, keyboards, mouse, Radio, Phones, Fax, Photocopy machines, cables from computer laboratories of various departments
- Flip flops, memory chips, motherboard, compact discs, cartridges
- Kitchen equipment from staff quarters and hostels like toasters, coffee makers, microwave ovens etc.
- Laboratory equipment's from various departments.
- ❖ Totally 2330kg E –waste generated is destructed every year.
- The condemned electronic equipment's are handed over to the estate office on



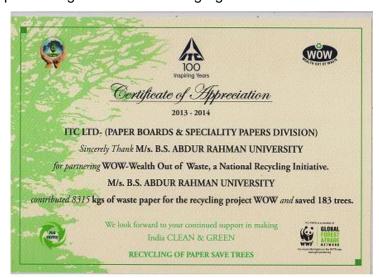
a regular basis by the departments after checking or inspection by a committee consisting of Senior Professors. Once the equipment's are certified as obsolete or non-working it is condemned and handed to estate office.

- This E waste which is collected is then disposed to vendors.
- It is also ensured that the generated E wastes are not disposed along with the other solidwaste generated in the campus.
- Collection of e waste separately is a sustainable approach to prevent such waste reachingthe landfills and also provides an opportunity to recycle such waste.
- The e waste collected separately is handed over to the vendors for recycling or disposal.
- The company GEMS recycling PVT Limited, Neervallur Village, Kanchipuram district, Tamilnadu collects all the waste.
- Our institute has received certificate for destruction and disposal of waste from the company for reprocessing/recycling the waste without harming the environment in an ecofriendly manner.
- ❖ A Standard Operating Procedure has been evolved for handling the waste disposal system.
- Awareness is also created among faculty, students and also office bearers on the usage of electronic goods, its usage and also on the ways that it has to be collected and disposed
- Electronic goods are put to optimum use; the minor repairs are set right by the supporting staff and the Laboratory non-teaching faculty and the major repairs, by the professional technicians, and are reused.
- ❖ The damaged computers are used by the instructors in the practical sessions. Finally, they are exchanged with the local dealers.
- UPS Batteries are recharged / repaired / exchanged by the suppliers.
- The waste compact discs are reused by civil engineering/architecture students for decoration/participation in competitions.
- Steel, Iron, Aluminum, and Wood from construction site will be sent to scrap shop and furtherto recycling plants.
- Steel, Iron, Aluminum, from laboratories will be sent to scrap shop and further to recyclingplants.
- All the communication of the institute is through Internet within the teaching and nonteachingfaculty members.
- There are hardly any floppies or CDs used for day to day operations.

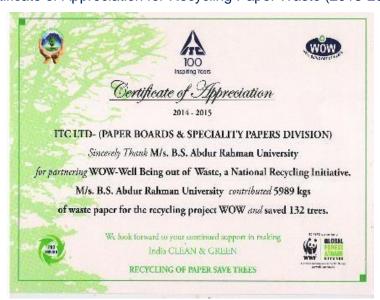


DOCUMENTAL EVIDENCES FOR SOLID WASTE MANAGEMENT

The solid waste management project is intended to safely dispose the waste generated at the campus by way of segregating the waste as organic waste, recyclable waste and inert waste and processing the waste thus segregated.



Certificate of Appreciation for Recycling Paper Waste (2013-2014)

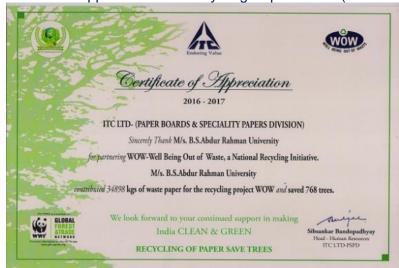


Certificate of Appreciation for Recycling Paper Waste (2014-2015)





Certificate of Appreciation for Recycling Paper Waste (2015-2016)



Certificate of Appreciation for Recycling Paper Waste (2016-2017)









Collection of Solid Waste





Segregation of Solid Waste





Recovery of Recyclable Waste





Windrow Formation and Rotation





Training and Awareness Program for Housekeepers and Green Friends



WASTE COLLECTION DATA FROM 2016 TO 2020

S.No	Month	Organic waste in Kg	Recycle waste Kg	Inert waste Kg	Total Waste in Kg
1	Jan'16	5,977	1949	13429	21,355
2	Feb'16	5,635	1983	12700	20,318
3	March'16	5,800	2507	13736	22,043
4	April'16	5,477	2775	12898	21,150
5	May'16	4,544	2410	11457	18,411
6	June'16	5,252	2747	13150	21,149
7	July'16	3,676	3124	12409	19,209
8	Aug'16	5,330	4374	9217	18,921
9	Sep'16	4,917	2861	1830	9,608
10	Oct'16	7,956	3412	1225	12,593
11	Nov'16	10,966	4525	1025	16,516
12	Dec'16	8,394	2283	794	11,471
13	Jan'17	10,107	3043	909	14,059
14	Feb'17	10,426	3174	881	14,481
15	March'17	11,788	3980	1077	16,845
16	April'17	11,819	4423	1230	17,472
17	May'17	2,710	5608	3970	12,288
18	June'17	711	5305	591	6,607
19	July'17	885	4828	790	6,503
20	Aug'17	1,187	4477	708	6,372
21	Sept'17	1,393	5046	633	7,072
22	Oct'17	9,096	4252	689	14,037
23	Nov'17	10,677	4751	947	16,375
24	Dec'17	11,446	5958	1084	18,488
25	Jan'18	17,653	7280	1215	26,148
26	Feb'18	13,529	7529	1721	22,779



27	Morido				
	Mar'18	11,648	8716	1496	21,860
28	April'18	10,782	7588	1537	19,907
29	May'18	5,912	7112	1794	14,818
30	June'18	5,643	6914	1801	14,358
31	July'18	10,997	6292	1892	19,181
32	Aug'18	9,880	5083	1696	16,659
33	Sept'18	9,610	5389	1580	16,579
34	Oct'18	9,910	5622	1705	17,237
35	Nov'18	9,325	5995	1521	16,841
36	Dec'18	9,726	4578	1620	15,924
37	Jan'19	9,524	5092	1684	16,300
38	Feb'19	10,142	5554	1507	17,203
39	March'19	10,122	5865	1715	17,702
40	April'19	-	-	-	-
41	May'19	1,630	7465	3015	12,110
42	June'19	2,260	5165	2675	10,100
43	July'19	9,135	2970	6500	18,605
44	Aug'19	9,730	2583	7100	19,413
45	Sept'19	13,260	1785	10850	25,895
46	Oct'19	12,600	1180	11350	25,130
47	Nove'19	17,100	1688	15450	34,238
48	Dec'19	15,600	1390	15700	32,690
49	Jan'20	21,900	2155	19800	43,855
50	Feb'20	23,900	2390	26700	52,990
51	March'20	14,950	1440	19100	35,490
52	April'20	-	-	-	
53	May'20	390	86	7200	7,676
54	June'20	627	300	22700	23,627
55	July '20	295	495	55523	56,313



SOLID WASTE MANAGEMENT - ECOBIN (250 KGS / DAY)



250Kg Ecobin in BSACIST for the management of food Waste

Operating Procedures

Food waste after segregate loaded and mixed with 10-15% of saw dust +0.1% Bioculum. Now the mixture lifted into feeding port of Ecobin. In the tank, mixing operation will be done with regular time intervals in a day by day using main agitator derive.

Air will pass through into the tank by using blower with regular time intervals. Repeating mixture operation for feeding 250kgs per day. After repeating the activities for 15 days' compost developed at the bottom.

Around 30,735kgs of collected compost collected till July 2020 and used for fertilizing the soil by toping up in the soil.









ECO-BIN

SOLID WASTE MANAGEMENT - GARBAGE INCINERATOR

- Garbage Incinerator machine installed in our campus/solid waste management yard with50kg/hr. capacity reducing waste product to inert ash.
- ❖ Daily generation 500kg/day and generated fly ash being used as manure.
- ❖ Incinerated item will be less than 10% of their original bulk when reduced to ash
- ❖ Use for incinerator of waste paper, tea cup, Dry garbage and kitchen dry waste.
- Transport cost from point of work generation to disposal site are dramatically reduced.
- Around 12,815Kg generated till July 2020 as an alternate solution to landfill.









SOLID WASTE MANAGEMENT - SANITARY INCINERATOR





- Incinerator machine has been installed to dispose sanitary napkins.
- Separate bins are provided in all ladies' toilets in university and in Ladies Hostel to separatethe napkins from other waste.
- Wet scrubber is attached at the outlet of burner where the fumes gets scrubbed in water and gets filtered to remove the harmful emissions. Separate Napkin destroyer machine has installed in Ladies hostel 5 Nos and 1 in Medical Hall.

SOLID WASTE MANAGEMENT - BIO-GAS PLANT

A Biogas plant of 50 m³ capacity for Ladies Hostel was commissioned in June 2017. The gasgenerated from the plant is utilized for cooking in Ladies Hostel Mess Kitchen.





Biogas Plant





Food waste feed in to Bio Gas Plant

BIO GAS GENERATION FOR THE PERIOD OF 2017 - 2020					
Month	Total Gas consumed(cum)	Equivalent to LPG (KG)	Cost Saved (Rs)		
Sep'17	94	42	2,601.00		
Oct'17	180	81	5,280.00		
Nov'17	366	164.7	12,062.00		
Dec'17	277	124.65	9,178.00		
Jan'18	170	76.5	5,594.57		
Feb'18	153	68.85	5,016.00		
Mar'18	186	83.7	5,756.00		
April'18	195	87.75	5,839.00		
May'18	138	62.1	4,105.00		
June'18	11.03	4.96	327.82		
Aug'18	110.814	49.86	3,296.42		
Sept'18	55.56	25	1,993.58		
Oct'18	51.196	23.03	1,941.79		
Nov'18	49.905	22.45	2,006.32		
Dec'18	17.099	7.69	608.72		
Jan'19	180	81	5,280.00		
Feb'19	366	164.7	12,062.00		
Mar'19	153	68.5	5,016.00		



Apr'19	360	162	10,560.00
May'19	178	80.1	5,510.00
Jun'19	94	42	2,601.00
July'19	192	86.4	5,679.00
Aug'19	274	123.3	7,289.00
Sept'19	186	83.7	5,170.00
Oct'19	330	148.5	9,371.13
Nov'19	190	85.5	5,935.50
Dec'19	112	50.4	3,535.95
Jan'20	92	41.4	2,139.00
Feb'20	80	36	2,232.00
March'20	56	25.2	1,465.00
Total	4897.604	2202.94	149451.8

BIOBOX

Our Institute has established BIO BOX unit of 50Kg/day capacity in association with M/S.Kankyo Group of Companies to generate biogas from various organic solid waste.



BIOBOX- Biogas generation unit



Pyrolysis unit

PYRO-CRACKER

Our Institute has established Pyro- Cracker unit of 25 Kg / Batch capacity in association with M/S.Kanyo Group of Companies for thermal pyrolytic degradation of plastic, biomass and mixed garbage.



CSIR - CLRI SPONSORED PROJECT - BIOGAS PLANT 500 KGS/DAY (ON GOING)

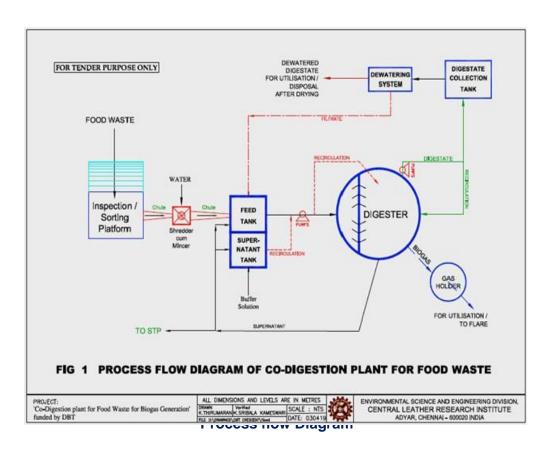
Establishment of new Biogas plant 500kg/day at Men's Hostel



Erection & Commissioning stage

- Biogas Plant 500 kgs/day from CSIR-CLRI, Govt. of India, Chennai funded by DST New Delhiin collaboration with KANKYO Technologies.
- To handle the food waste generated from hostel kitchens and canteens
- It will generate 15-20 m3/day gas from the plant and the same will be utilized for our cookingneeds at Hostel kitchens and Canteens.
- The total cost of project is 35 lakhs. (Crescent Contributed 10 lakh).







Final view



LIQUID WASTE MANAGEMENT - SEWAGE TREATMENT PLANT - 500KLD

- 2 nos. of Sewage treatment plants of 250KLD capacity are available, one for Men's Hostel andone for Institute campus. The STP is of Eco-Bio Block type. The treated water is used for landscaping and toilet flushing purpose.
- ❖ The sewage treatment plant is working on the principle of attached growth aerobic system (Eco-Bio bricks) followed by sand filter and carbon filter. The treated water is having a COD about 100 mg/L and BOD about 16 mg/L.









Location	Capacity	Remarks
College	250KLD	Commissioned in 2003 as a 150KLd plant. Revamped and
campus		capacity increased to 250KLD in 2015
Men's Hostel	250KLD	Commissioned in 2014



DETAILS OF WASTEWATER GENERATION

S.No	Location		Water recycled	% of water reutilized
1	College campus	250 KL	220KL	90
2	Men's Hostel	250 KL	220KL	90

RECYCLED WATER DETAIL 2016-2020					
S.No	Month/ year	No of Loads	Total Qty in Liters	Quantity of treated water in Ltrs	
1	Nov'16	1709	17090000	12170000	
2	Dec'16	1467	14670000	10576000	
3	Jan'17	1269	12690000	10506800	
4	Feb'17	1501	15010000	12429000	
5	March'17	1765	17650000	13586000	
6	April'17	1531	15310000	12124000	
7	May'17	1539	15390000	12663000	
8	June'17	1105	11050000	7745000	
9	July'17	1278	12780000	7249000	
10	Aug'17	1756	17560000	13668000	
11	Sept'17	1608	16080000	13461000	
12	Oct'17	1676	16760000	14585000	
13	Nov. 2017	1318	1,31,80,000	1,35,86,000	
14	Dec. 2017	1294	1,29,40,000	1,36,68,000	
15	Jan. 2018	1213	1,21,30,000	1,11,60,000	
16	Feb. 2018	1209	1,20,90,000	1,17,80,000	
17	Mar. 2018	1281	1,28,10,000	1,20,90,000	
18	Apl. 2018	1236	1,23,60,000	1,24,00,000	
19	May. 2018	1301	1,30,10,000	1,34,61,000	
20	June. 2018	954	95,40,000	81,24,000	
21	July. 2018	1334	1,33,40,000	1,13,15,000	
22	Aug. 2018	1327	1,32,70,000	1,16,25,000	
23	Sep. 2018	1288	1,28,80,000	1,20,90,000	
24	Oct. 2018	1427	1,42,70,000	1,10,05,000	
25	Nov. 2018	1294	1,29,40,000	1,08,50,000	
26	Dec. 2018	1026	1,02,60,000	9,54,000	
27	Jan. 2019	1169	1,16,90,000	1,07,80,000	
28	Feb. 2019	1527	1,52,70,000	1,19,35,000	
29	Mar. 2019	1709	1,70,90,000	1,20,90,000	
30	Apl. 2019	1374	1,37,40,000	1,21,52,000	
31	May. 2019	1448	1,44,80,000	1,21,83,000	
32	June. 2019	873	87,30,000	82,20,000	
33	July. 2019	1305	1,30,50,000	1,00,75,000	
55	July. 2013	1000	1,50,50,000	1,00,70,000	



34	Aug. 2019	1158	1,15,80,000	1,11,91,000
35	Sep. 2019	1360	1,36,00,000	1,12,84,000
36	Oct. 2019	1262	1,26,20,000	1,13,46,000
37	Nov. 2019	1233	1,23,30,000	1,15,94,000
38	Dec. 2019	963	96,30,000	76,56,000
39	Jan. 2020	1028	1,02,80,000	1,12,53,000
40	Feb. 2020	1403	1,40,30,000	1,14,39,000
41	Mar. 2020	1194	1,19,40,000	1,16,56,000
42	Apl. 2020	479	47,90,000	49,35,000
43	May. 2020	589	58,90,000	54,31,000
44	June. 2020	561	56,10,000	45,55,000
45	July. 2020	408	40,80,000	4,45,000
46	Aug. 2020	471	47,10,000	4,49,000

MIRA CARBON SEWAGE TREATMENT PLANT

Our Institute has established MIRA CARBON SEWAGE TREATMENT PLANT of **2** m³ capacity in association with M/S.Kanyo Group of Companies to treat domestic wastewater generated from the Institute.

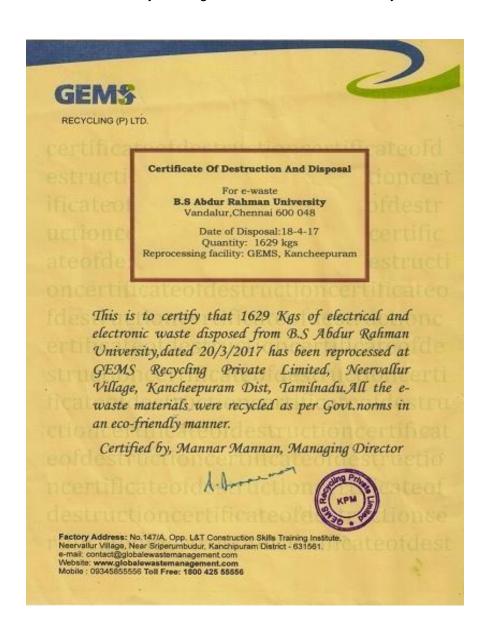


Mira carbon sewage treatment plant



E-WASTE MANAGEMENT

All obsolete electrical and electronic waste is disposed as e-waste to vendors for proper destruction without damaging the environment and certificate for such destruction and disposal are obtained. Totally 2330kg E –waste destructed in the year 2017.





CERTIFICATE FOR DESTRUCTION OF E WASTE



Certificate of Destruction

COD No: VGIN170336 CPCB REG No: 8-29016(1881)/1(Reg) 10/HWMD

Company Name
Company Address
Company Ref
Date Collected: 41/2/2017
Date Received: 14/12/2017
Date of Destruction: 28/12/2017

This document certifies that all the below mentioned items were received and processed in an environmentally responsible manner by **Virogreen India Private Limited** ., **Chennal**

This further certified that the items identified below had been properly disposed in an environmentally responsible manner, utilizing the process and equipment available in accordance with the Company procedures or written instructions where explicable. This "Certificate of Destruction" is issued based on a series of specific activities; including collection, identification, separation and treatment by mechanical process or manual means, whereby material elements are destructed from the "IteMS" rouse in the form of raw materials and is deemed no longer fit for original intended purpose, and recycled wherever possible.

Index	Description	Qty
		Kgs
1	E-Waste Scrap	701



Factory: 5/No.297/18-2, No.49, Pappankuppam Village, S.R. Kandigai Road, Gummidipoondi – 601 201
Thiruvallur Dist, Tamili Madu, India. (CIM No: U52392TN2002PTC049211) Phone: +91 – 44-65485915.
Fax: +91-44-6251 2449, Mobi: +91 99408 31313,
Email: reachus@virogreen.in

EMQR EMQR



Certificate of Destruction

Company Nante:

M/s. B5 Abdur Rahman Cresent Institution
Of Science Technology,
Company Address:
Campany Ref:
Date Collected:
1/22017
Date Secreted:
1/22017
Date of Destruction:
28/12/2017

This document cortilies that all the below mentioned items were received and processed in an environmentally responsible manner by **Virogreen India Private Limited.**, **Chennai**

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Index	Description	Qty
		Kgs
1	L-Wosle Scrap	701



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BIO-WASTE MANAGEMENT

All biological waste generated from Life Science Department and Medical Centre is disposed as bio- waste to vendors for proper destruction without damaging the environment and certificate for such destruction and disposal are obtained.

