



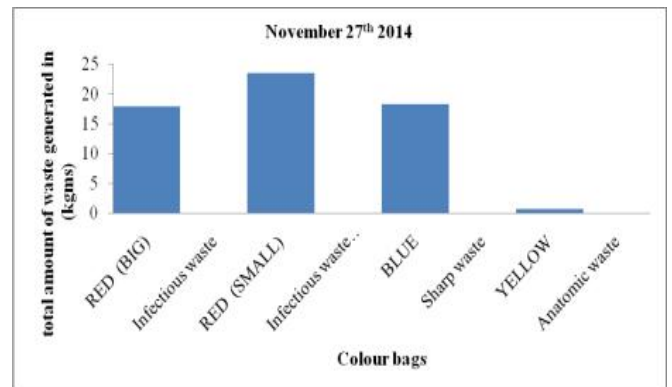




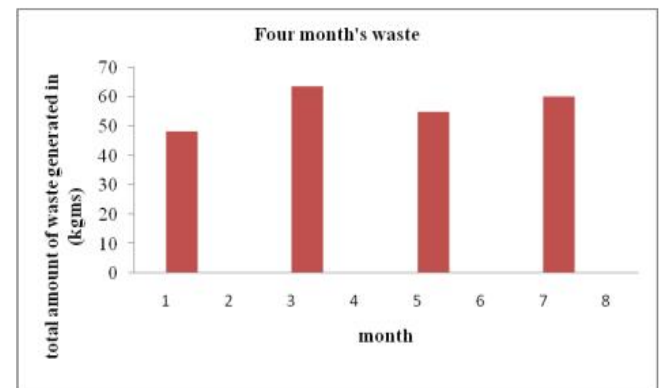


**Table 2: Total Amounts of Solid Waste Generated in each month (Kgms)**

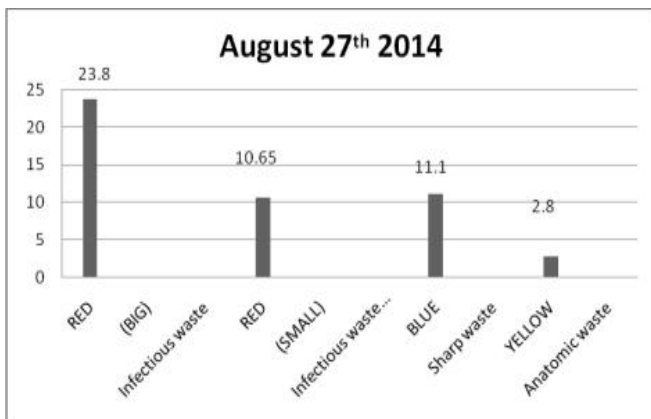
Color bags	Total amount of waste generated in each month (kgms)	Aug 27 <sup>th</sup> 2014	Sep 27 <sup>th</sup> 2014	Oct 27 <sup>th</sup> 2014	Nov 27 <sup>th</sup> 2014	Total amount of waste generated in (kgms)
RED (BIG) Infectious waste	23.8	25.3	18.6	17.9	48.35	
RED (SMALL) Infectious waste dipped in fluid	10.65	20.7	13.5	23.4	63.5	
BLUE Sharp waste	11.1	17.5	17.5	18.2	55	
YELLOW Anatomic waste	2.8	0.5	0.3	0.7	60.2	



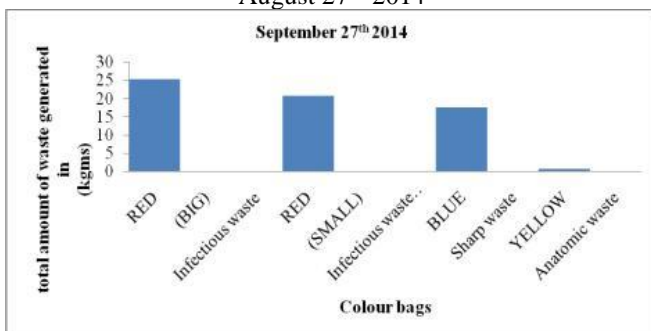
**Figure 4: Total amount of waste generated in (kgms) for November 27<sup>th</sup> 2014**



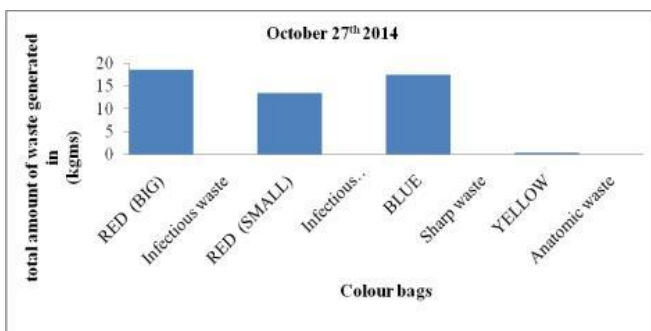
**Figure 5: Total amount of waste generated in (kgms)**



**Figure 1: Total amount of waste generated in (kgms) for August 27<sup>th</sup> 2014**



**Figure 2: Total amount of waste generated in (kgms) for September 27<sup>th</sup> 2014**



**Figure 3: Total amount of waste generated in (kgms) for October 27<sup>th</sup> 2014**

From the Fig 1 to 4.2it is clear that the composition of wastes disposed in each month for four month such as, red big bag contain infectious waste 85.6kgms, red small bag contain infectious waste that dipped in the fluid HCL then we put weight 68.25kgms, blue bag contain sharp waste 64.3kgms, yellow bag contain anatomic waste 4.3kgms.

In this four month the ward and bed for patients not constant. Each and every day increase and decrease. The bed for four months 27<sup>th</sup> day August 27<sup>th</sup> 2014 [1798],September 27<sup>th</sup> 2014 [1048],October 27<sup>th</sup> 2014 [985] November 27<sup>th</sup> 2014 [1092]

**B) Effluent Treatment Plant:**

Flow chart of effluent treatment plant

Units	Size	Design Details	Quantity
Flow Collection tank	0.849 cumec 6 m X 3m X3m+ 0.5 (fb)	Design flow=0.849cu Mec Detention time = 60 sec	1
Screen Chamber	2.0m X 0.60m X 0.70m	1.18m/s flow velocity. Provide bars Of 10mm*50mm with clear opening of 25mm.n=16bars	2
Grit Chamber	7.87m X 4.5m X 3m	Peak flow42.5m3/m In	2
Oil and	11m X 6.5m X	detention time	1

**Table 3** Technical Details of ETP Units

grease trap	1.5m	t =5.0 min.	
Primary sedimentation Tank	21.24mX5.31m X3.1+ 0.6(fb)	detention time 2.07hr, Overflow rate at average flow= 36m <sup>3</sup> /m <sup>2</sup> .d	1* (6basin)
Aeration tank	22mX10.88mX 4.5+0.8(fb)	Detention time = 8.37hr	1* (8basin)
Secondary clarifier	19.15m.diaX3.5+0.5m(fb)	Detention time under average design flow plus recirculation = 5.63hr	1* (8basin)
Chlorination contact Tank	18m X 9.6 m X 3.4m	Provide 3 no. of chlorination [2working +1stand by] each of 60kg/d capacity	1
Filter Feed Tank	32 m X 16m X 3m	Detention time = 1.5hrs	1
Pressure sand filter	20 m.dia X 1.5 – 1.8m	Loading rate on filter 12 m <sup>3</sup> /m <sup>2</sup> /Hr.Depth of sand layer0.6– 0.75 m	1
Activated carbon filter	22 m.dia X 1.5 – 1.8m	Loading rate on filter = 10 m <sup>3</sup> /m <sup>2</sup> / hr. Depth of sand layer 0.6 –0.75 m	1
Primary sedimentation sludge	11.5m.dia X 3m	Amount of Solids produced per basin per day at a removal rate of 63 percent =588.41 kg/d	1
Sludge thickener	5.5m.dia X 3m	drying ratio = 5 percent, Thickener =141 m <sup>3</sup> /d	6
Sludge drying beds	30 m X 3m X0.25m	Volume of sludge =157.103m <sup>3</sup> /day	7 beds

## 4. Conclusion

### A) Solid Waste Composition

The result obtain during present investigation rival that waste generation from august to November 27th 2014 Red big bag waste that means (infectious waste) gradually decrease each month Aug 23.800kgms, Sep 25.300kgms, Oct 18.600kgms, Nov 17.900kgms. Red small waste that means (infectious waste) gradually increase each month Aug 10.650kgms, Sep 20.700kgms, Oct 13.500kgms, Nov 23.400kgms. Blue bag (Sharp waste) Aug 11.100kgms, Sep 17.500kgms, Oct 22.600kgms, Nov 18.200kgms. yellow waste (anatomic waste) Aug 2.800kgms, Sep 0.500gms, Oct 0.800gms, Nov 0.700kgms. So proper segregation is important otherwise it become hazardous one.

Proper management of Bio medical waste is a concern that has been recognized by both government agencies and the Non government organizations. Several hazards and toxic materials containing should be disposed off with proper take and care. Inadequate and inefficient segregation and transportation system may cause severe problem to the society hence implementing of protective measures, written policies all of these factors contribute to increased risk of exposure of staff, patients and the community to biomedical hazards. Safe and effective management of bio medical waste is not only a legal necessity but also a social responsibility. Lack of concern in persons working in that area, less motivation, awareness and cost factor are some of the problems faced in the proper hospital waste management clearly there is a need for education as to the hazards associated with improper waste disposal. With respect to the above scenario, steps are being taken to improve the present

system of BMW management in the state. The Common Bio-Medical Waste Treatment and Disposal Facilities (CBMWTF) are operating at Thanjavur(Sengipatti)

Both the facilities manoeuvred by Private Operators, provide service for collection, transportation, treatment and disposal of BMW in lieu of a service cost. These facilities are now covering large number of health care units situated in different districts. An affirmative step is also taken in part from Medicare Incin Pvt. Ltd to set up a CBMWTF in Thanjavur(Sengipatti), This resolves the problem of waste generated by the rural health care units, which could not be accessed on a day-to-day basis because of these units being situated in remote areas and operating in small capacities

### B) Effluent Treatment Plant (ETP):

The technical project involves integration of various fields. This report has combined all the aspects of environmental, chemical, biological and civil engineering. The plant is designed to meet future expansion for the next 30 (2050) years, population of 2, 26,276.2. This project consist the design of the complete components of a wastewater treatment plant from receiving chamber, screening chamber, grit chamber, fine screen, primary sedimentation tank, secondary sedimentation tank, activated sludge tank, sludge drying beds, chlorination tank, Filter feed tank, pressure sand filter, activated carbon filter, treated effluent tank and sewers systems with civil estimation. The construction of Wastewater treatment plant will prevent the direct disposal of wastewater from municipality sewer system of hospital into nearby River and the usage of treated water will reduce the surface and ground water contamination

## Reference

- [1] Prakash V, Dr. N. Palaniraj (2014) Legal Aspects and Process of Biomedical Waste Management Practices in India Journal of Exclusive Management Science – January 2014 - Vol 3 Issue 1- ISSN 2277 – 5684
- [2] Palanisamy Pasupathi\* , Sivaraman Sindhu , Babu Shankar Ponnusha , Athimoolam Ambika (2011)Biomedical waste management for health care industry Int J Biol Med Res. 2011; 2(1): 472-486
- [3] B. Ramesh Babu\*, A.K. Parande, R. Rajalakshmi, P. Suriyakala, M. Volga (2009) Management of Biomedical Waste in India Other Countries: A Review, J. Int. Environmental Application & Science, Vol. 4 (1): 65-78
- [4] Saurabh Gupta a, \*, Ram Boojh b, Ajai Mishra c, Hem Chandrad (2009) Rules and management of biomedical waste at Vivekananda Polyclinic: A case study elsevier Waste Management 29 (2009) 812–819
- [5] Lalji K. Verma \*, Shyamala Mani, Nitu Sinha, Sunita Rana (2008) Biomedical waste management in nursing homes and smaller hospitals in Delhi elsevier Waste Management 28 (2008) 2723–2734
- [6] R. Mohee \* (2005) Medical wastes characterisation in healthcare institutions in Mauritius elsevier Waste Management 25 (2005) 575–581
- [7] Powar M.M., Kore V.S., Kore S.V. (2012) A Case Study of Common Effluent Treatment Plant at Five Star MIDC, Kagal Volume 1, Issue 1: 1-6
- [8] Prayitno,Zaenal Kusuma,Bagyo Yanuwidi, Rudy W Laksmono(2013) Study of Hospital Wastewater

Characteristic in Malang City, Issn: 2278-4721, Vol. 2,  
Issue 2 (January2013), Pp 13-16

- [9] Mongam Bole, Omem Paron, Rita Tiwari& Ajay Bharti  
(2014) Quantification and Characterization of the  
BioMedical Waste in Arunachal State Hospital,  
Naharlagun, Volume 3, Special Issue 4, March 2014.
- [10] Fatima Hussein abd ali, dr. salah farhan (2011) desigen  
of wastewater treatment plant Bharath Kumar R. B, Dr.  
D. P Nagarajappa, Dr. K. M.ShamSundar, Dr. P.  
Shivakeshava Kuma(2014) Proposed Wastewater  
Treatment Plant Design of Harihar City, ISSN: 2278-  
0181 Vol. 3 Issue 9, September- 2014
- [11] Ajay Kumar Gautama, Sunil Kumarb,  
P.C.Sabumona(2007) Preliminary study of physico-  
chemical treatment options for hospital wastewater,  
Journal of Environmental Management 83 (2007) 298 –  
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