

Qualitative and Quantitative Study of Hospital Solid Waste and Suggested Management Strategy at District Hospital Sidhi (M.P.) India

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ABSTRACT: Apart from natural calamities man-made problems are also contributing substantially for the overall pollution existing today. Among all the hospital solid waste which include anatomical, pathology and laboratory waste, office waste plastics, sharp and expiry medicines etc. are also research major contributor of pollutant in this work, an attempt have been made to characterize and quantify hospital solid waste generated from different wards and clinical areas of hospital. Moreover, an eco-friendly plans for disposal of hospital waste have also been suggested.

Keywords: Hospital solid waste, pollution, management strategy, sidhi

I. INTRODUCTION

A large quantity of hospital waste is produced form health care institution across the country, which create health hazards. The district hospital Sidhi was selected to study the quantity of waste generated from different wards of hospital. The adopted waste management strategy in hospital also studied during study period. The quantitative study of solid hospital waste helps in affective management of hospital waste as well as to know the exact waste generated form different wards of hospital which in turn will help in better handling and managing hospital waste.

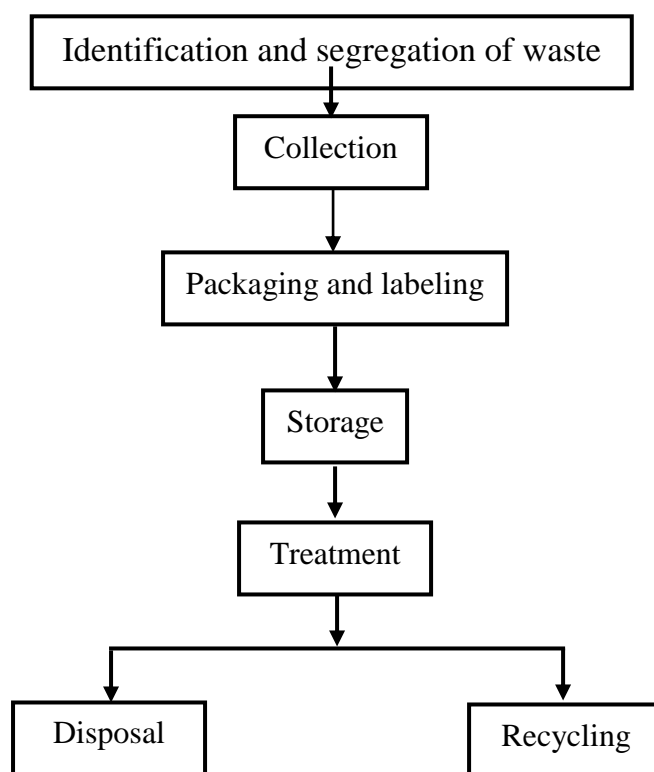
Quantitative study of hospital waste also helps to decide the installation treatment and disposal devices according to need in this way installation of high capacity treatment and disposal devices like chemical treatment plant, incinerator etc. may be done properly.

The present study also help in working out shared cast for installing any devices if promoted by private and state agencies. This study also deals at large with the category wise quantification of hospital waste for the better management.

II. MATERIAL AND METHODS

The amount of hospital waste generated from different wards varies and have different combination even if the total numbers of beds are same. Objective of present study was to quantity the hospital waste generated from different wards in hospital. For the study District Hospital Sidhi was selected which is the largest government hospital of district covers whole district with 300 beds the study was conducted for two weak.

During the study period hospital solid waste was collected separately form each department mentioned in observation table waste solid was collected category wised in coloured bags (prescribed by Bio-medical waste handling and management Rule 1998) were given to Safai Karamcharies for collection of waste and display sheets also given which contain names of the content and pictures and figure as most of the Karamcharies are illiterate. Collected waste again segregated and weighed then analyzed. After weighing bags contains with waste returned to safai Karamcharies for disposal.



Flow Chart

III. RESULT AND DISCUSSION

Results are represented in table -1 which shows ward wise quantity of generated hospital waste and its percentage also.

Table 1
Physico-Chemical Study and assessment of Quantitative generation of hospital waste at sampling stations at District Hospital Sidhi

S. No	Source Department	Quantity of waste (kg/day)		Quantity of waste (kg/day/bed/occupied)		Average waste generated	Percent age of total average	Type of waste
		Range of generated waste	Average of generated waste	Percentage of total average generated waste	Range of generated waste			
1.	OPD (Out Patient Dept.)	1.20-5.38	2.23	2.93	0.40-0.98	0.25	1.94	Infectious and Non infectious waste
2.	Emergency Ward	3.95-10.12	5.10	7.11	0.38-2.78	1.10	8.21	Infectious waste
3.	Gynecology Dept.	4.01-15.53	6.10	8.01	0.50-4.11	1.28	9.10	Infectious waste
4.	Denestry Dept.	0.38-1.20	0.80	1.00	0.02-0.12	0.07	0.53	Infectious and Non infectious waste
5.	X-ray/Imaging /community	1.03-2.95	2.32	3.00	0.00-0.05	0.01	0.07	Radioactive
6.	Pediatric Dept.	1.20-3.20	2.31	3.00	0.80-1.03	0.95	6.77	Infectious and non infectious waste

7.	Operation Theatre	1.00-8.21	7.23	9.82	0.04-3.90	2.38	15.65	Infectious waste
8.	General Ward	3.00-15.00	11.21	13.31	1.98-2.97	1.12	9.98	Non infectious waste
9.	Pathology Laboratory	1.29-4.31	2.96	3.12	-	-	-	Infectious waste
10.	Sample collection room	1.01-2.50	1.22	1.98	-	-	-	Infectious waste
11.	Blood Bank	0.40-1.12	0.85	1.11	0.03-0.10	0.04	0.27	Infectious and non infectious waste
12.	Lobour Room	3.97-13.12	5.90	7.10	0.40-3.97	1.12	7.82	Infectious waste
13.	Kitchen and Canteen	10.02-25.27	19.37	21.22	3.25-7.31	5.97	36.30	General waste
Total			65.23	100		11.3	100	

IV. SUGGESTED ECO-FRIENDLY PLAN FOR DISPOSAL OF HOSPITAL WASTE

1. Identification, Segregation of waste :

Waste materials that always be considered of infectious and hazards, must be identified and segregate from the waste which is non infectious and non-hazardous.

2. Collection:

Yellow bag is used to collect incineration waste (Human Anatomical waste), Red bag is used for highly infectious waste which is non incineration (contaminated solid waste), Black bag is used for cytotoxic waste drugs, chemical waste, incineration ash and blue puncture proof bag is used to collect sharps.

3. Packaging and Labeling:

After collection of waste bags, they must be closed tightly and labeled indicating the contents shift, time of collection, name of person etc. Bags must be labeled with symbol of biohazard or cytotoxic.

4. Treatment and disposal:

Infectious waste must be treated chemically or thermally prior to dispose it. Waste of yellow bag must be incinerated at high temperature this waste must not be disinfected by chemicals. Waste of red bag be treated chemically and then finally disposal by deep buried method, waste blue bag (sharps) must be mutilate and disinfect first, then deep buried.

5. Recycling:

Office and house hold goods can be recycled. This category of waste includes paper, aluminum foils, cans, newspapers, cardboards etc. X-ray films can be recycled for silver content. Mercury can be recovered from a variety of equipments, brass can be recovered from anesthetic and other respiration fitting and plastics and glass cane also recycled, if segregate properly. Degradable waste from kitchen can be converted into compost.

REFERENCES

- [1.] NEERI, Manual on water and waste water analysis, Nagpur, India (1986)
- [2.] The Environmental Protection Act. Published in the Gazette Vide. S. O. 756, (E) 1986
- [3.] Tolerance Limit for industrial effluent discharged the inland surface water Bureau of Indian standards, 15:2490 (1974)
- [4.] Witts, Information on Science and Technology Application Part 4, Waterfalls institutes of New Delhi (2004)
- [5.] APHA Standard Method for Examination of Water and waste water edited by Andrew D. Eaton, Lenore S. Clesceri, Arnold E. Greenberg 19th edition (1995)
- [6.] Arion et.al. Hospital Solid waste Management A Case study. J. Env. Engg. Div. 106 (EE4) August 741-756 (1980)
- [7.] Biomedical Waste (Management and Handling) Rules 1998 vide S. O. 630 (E) Ministry of Environment and forest Notification, dated 20th July 1998
- [8.] HCOHSA, Report of the result of the Bio-medical waste management survey, Health care occupational health and safety, association Toronto and Ontario Hospital association Ontario, 1985
- [9.] Mc Gate A. M. Solid Waste Incineration and heat recovery at Royal Jubilees Hospitals B. C. Toronto, 1980