

Bio medical waste management in Jammu city

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Abstract

Ironically waste was not a problem for the society when man was primitive and uncivilized. The proliferation of modern concept of consumerism supplemented with culture of disposables has aggravated the waste problem. These biomedical wastes along with the municipal wastes commonly exceed the carrying capacity of biosphere to reabsorb and recycle. The present paper deals with the status of Bio medical waste management in Jammu city. 42 government and private health institutions have been identified which generate about 3917 kg/day @ 1.52 Kg/bed/day contributing 26% to the municipal solid waste. The paper seeks to demonstrate the waste collection, segregation, treatment and disposal of the wastes in the otherwise unplanned city of temples.

Key Words *Bio-medical waste, Carrying capacity, Incineration, P.V.C, Dioxin & Furans, Judicious.*

Introduction

Bio-medical waste has recently emerged as an issue of major concern not only in hospitals, nursing homes and slaughter houses but also to the legislation, media and to the most of the general public ‘Bio medical waste’ means any waste, which is generated during diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in production or testing of biologicals (gazette of India, 1998). All the health care institutions generate a cocktail of waste stream which serve as a paradise of infection in one form or the other. It is quite surprising that the institutions promoting the community health are least concerned, the proper disposal of their wastes thereby exposing the community vulnerable to diseases.

Keeping in view the deteriorating health scenario in last two decades, the ministry of environment and forests, government of Indian issued draft rules called 'Bio-medical Waste (Management and Handling) Rules 1995, which were finally amended and formulated in 1997. These shall be obligatory to all those health institutions providing treatment to a minimum of one thousand

patients per month. The four schedules of draft mainly deal with segregation, packing, transportation, storage, treatment and disposal viz :-

1. Categorization of biomedical wastes and their disposal options.
2. Containers and colour coding for disposal of biomedical wastes.
3. Labels for biomedical waste containers.
4. Standards for the treatment and disposal of biomedical wastes.

Aims and Objectives

1. Determination of Point of generation of biomedical wastes.
2. Quantification of biomedical wastes.
3. Classification of biomedical wastes.
4. Characterization of biomedical wastes.
5. Segregation and disinfection of biomedical wastes.
6. Disposal of biomedical wastes.
7. Management of biomedical wastes.

Materials and methods

The waste quantification was done by on the spot collection and weighing of biomedical wastes of each institution per day for a period of five months taking reading twice for each point in the study. The questionnaire approach was also applied to ascertain the awareness among the masses thereby involving attendants, patients, sweepers, doctors, superintendent, C.M.Os and ministry of health.

Results and Discussion

Forty-two health institutions serve as points of generation of biomedical wastes, which is generated at the tune of 3917 Kg/bed/day i.e., 1.52 Kg/bed/day at each institution, thus contributing to 26% of the total municipal solid waste of the city. These wastes include human anatomical blood and body fluid, animal and slaughter house wastes, microbiological wastes, surgical sharps, discarded medicines, liquid wastes, incineration ash, and chemical wastes etc. W.H.O has classified wastes in accordance to their pathogenecity and toxicity which are to be segregated accordingly prior being subjected to the recommended treatments. These include general pathological, radioactive, chemical, infectious and pharmaceutical wastes.

Segregation is the prime impetus to the biomedical waste management which is totally being ignored in the present pretext except for two institutions which follow the colour code

recommendations classified in extraordinary gazette notification of the ministry of environment and Forests, GOI Oct. 1997. yellow, orange, blue and black containers labeled with the waste category have been installed at the required locations for the exclusive collection of highly infectious, animal and slaughter house, waste sharps and disposables. The highly infectious wastes as surgical, anatomical and laboratory wastes are subjected to incineration and the rest collected along with municipal solid wastes and disposed in open which render to a complex of hygienic problems.

The next comes treatment, which is to be followed in accordance with the time schedule in schedule VI for the requisite facilities like incinerator, autoclave, microwave systems etc. of the 42, only four have installed incinerators of varied capacity and efficiency, but the lack of technical know-how for their operation has imposed a question mark on its efficiency. The segregated wastes are then subjected to incineration without following the norms as a result of inefficient performance, they aggravate the problem in terms of land as well as air pollution. The incineration ash is directly mixed with the hospital wastes which finally finds its way in municipal solid waste dumping sites. The incinerators emit chlorinated Dioxins and Furans with more than 210 molecular variations, 17 of which are extremely toxic even in nano gram concentrations (Lal, 2000). These are highly persistent and pervasive nonvolatile and fat soluble which accumulate in food chain. Mercury, Cadmium and Arsenic in the biomedical wastes are highly volatile and vapourise in the incinerator and get absorbed in physical and biological structures. Despite the ban on P.V.C. particularly in the incinerators, majority of waste incinerated include drip sets, gloves, surgical pads, syringes etc., which add to the air pollution. Moreover the stack height of the incinerators does not follow the recommendations.

The transportation of biomedical wastes is again a ignorant practice followed by the municipal authorities. It is not carried out in the specified vehicles. The medical waste is carried in open wagons along with municipal wastes and dumped at a common site.

Conclusion

The present biomedical management system suffers from many loopholes from the environment, legislative, management and technological points. The wastes generated from these institutions are vaguely disposed off without any knowledge about their hazardous impacts. The key to hospital waste management is segregation of waste at source. However it is not practiced in most of the hospitals across the country. Though the rules have specified colour codes for each categoric waste, but are not applied practically, as a result the mixing of wastes takes place at primary levels, secondly, the transportation is not carried out in specified vehicles and, thirdly and most dreadly, all hospital waste is dumped along with municipal solid wastes at a common dumping site.

The lack of awareness about biomedical waste management is due to certain reasons which include lack of proper training, education and motivation, financial crunch and above all the harsh fact-treatment of waste is not profitable to enterprise and to medical fraternity.

To attain a proficiency in biomedical waste management sector, it is the right time to make right choices where the health costs are not ignored. Establishment of sound waste management policies, improvement of internal waste collection infrastructure, installation of additional waste treatment facilities, awareness among the masses, quality assurance and strengthening of stringent laws (The Hindu, Survey of Environment) are few recommendations for judicious and efficient biomedical waste management.

Acknowledgements

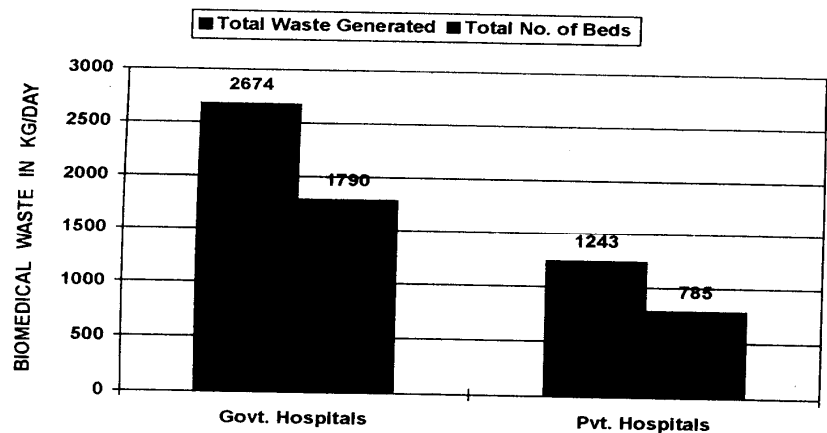
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BIOMEDICAL WASTE MANAGEMENT IN JAMMU - SOME FACTS

- i. Total number of hospitals & nursing homes present = 42
- ii. Total waste generated from hospitals/nursing homes = 3917 (kg/day)
 - Waste generated from Govt. Hospitals = 2674 (kg/day) @ 1.5 kg/bed/day
 - Waste generated from Private Hospitals= 1243 (kg/day) @ 1.4 kg/bed/day
- iii. Percentage of biomedical waste incinerated = 66%
- iv. Percentage of biomedical waste dumped = 34%
- v. Approximate efficiency of incinerators performed = 35%



TOTAL AMOUNT OF BIOMEDICAL WASTE GENERATED IN JAMMU CITY

TABLE - I
BIOMEDICAL WASTE QUANTIFICATION

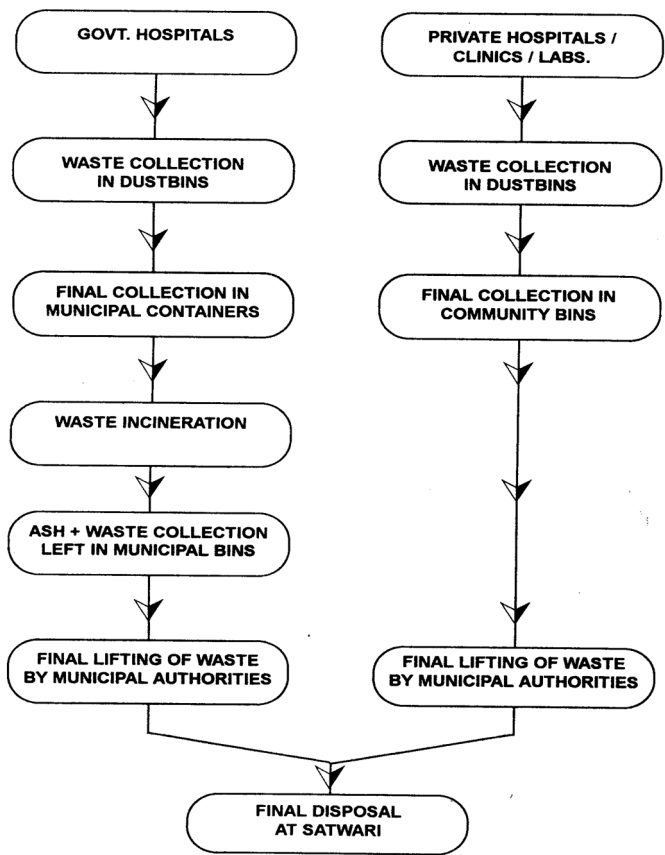
Name of the hospital/ nursing home	Location	No. of beds	No. of dustbins provided	Presence of color coding system for waste collection	No. of sanitation staff	Presence of incinerator	Mode of waste disposal	Amount of biomedical waste generated per day
Govt. Medical College and Hospital	Bakshi Nagar	850	90	Yes	162	+	Incineration	1275 Kg
SMGS Hospital	Shalamar	500	65	No	80	+	Incineration	750 Kg
Govt. Hospital Gandhi Nagar	Gandhi Nagar	300	40	No	25	-	Into dustbin provided	450 Kg
Govt. Chest Disease Hospital	Bakshi Nagar	35	20	No	15	+	Incineration	52 Kg
Govt. Ayurvedic Hospital	Amphalla	50	10	No	20	-	Into community bins	60 Kg
Govt. Mental Hospital	Amphalla	20	6	No	10	-	—do—	35 Kg
Govt. Sub Distt.	Sarwal	20	9	No	5	-	—do—	30 Kg
Govt. Leprosy Hospital	Gangyal	15	8	No	5	-	—do—	22 Kg
Acharya Shri Chander Hospital	Sidhra	250	40	No	6	+	—do—	375 Kg

Name of the hospital/ nursing home	Location	No. of beds	No. of dustbins provided	Presence of color coding system for waste collection	No. of sanitation staff	Presence of incinerator	Mode of waste disposal	Amount of biomedical waste generated per day
KHN Memorial Hospital	Rail Head Complex	100	10	No	30	.	Into community bins	240 Kg
Bee-Errn Charitable Hosp.	Talab Tillo	50	30	No	15	.	Into community bins	80 Kg
G.B. Pant Hospital	Shastri Nagar	40	20	No	8	.	—do—	60 Kg
Military Hospital	Satwari	30	10	No	6	.	—do—	45 Kg
Sanjeevani Nursing Home	Gandhi Nagar	10	20	No	4	.	—do—	15 Kg
Medicare Nursing Home	Gandhi Nagar	10	18	No	4	.	—do—	15 Kg
Aastha Nursing Home	Amphalla	12	8	No	4	.	—do—	18 Kg
Shafa Nursing Home	Shastri Nagar	12	10	No	4	.	—do—	18 Kg
Mother and Child Nursing Home	Talab Tillo	10	8	No	4	.	—do—	15 Kg
Upkar Nursing Home	Trikuta Nagar	8	10	No	2	.	Into community bins	12 Kg

Name of the hospital/ nursing home	Location	No. of beds	No. of dustbins provided	Presence of color coding system for waste collection	No. of sanitation staff	Presence of incinerator	Mode of waste disposal	Amount of biomedical waste generated per day
Lajwanti Trust Hospital	Greater Kailash	8	10	No	2	-	-do-	12 Kg
Jeevan Jyoti Nursing Home	Shakuntala Complex	10	12	No	3	-	-do-	15 Kg
Ankur Nursing Home	Trikuta Nagar	10	10	No	2	-	-do-	12 Kg
Triveni Nursing Home	Trikuta	10	6	No	2	-	-do-	15 Kg
Kapur Nursing Home	Shakti Nagar	8	6	No	2	-	-do-	12 Kg
Makkar Nursing Home	Bakshi Nagar	10	6	No	3	-	-do-	15 Kg
Dubey Nursing Home	Canal Road	8	6	No	2	-	-do-	12 Kg
Navjeevan Nursing Home	Near Telephone Exchange Road	8	6	No	2	-	-do-	12 Kg

KEY : + PRESENT
- ABSENT

PROCESS FLOW DIAGRAM
BIOMEDICAL WASTE MANAGEMENT





Waste storage in open in backyard of SMGS Hospital



Open burning at Municipal waste disposal site at Satwari



Single chamber incinerator at ASCM Medical college (Only 7 meters), & animal feeding on dumped Biomedical waste