

## **HOSPITAL WASTE: MANAGEMENT & HANDLING**

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### **ABSTRACT**

Medical care is vital for our life, health and wellbeing. But the waste generated from medical activities can be hazardous, toxic and even lethal because of their high potential for diseases transmission. The concern for hospital waste management has been felt globally with the rise in infectious diseases and indiscriminate disposal of waste. Medical waste has been identified by US Environmental Agency as the third largest known source of dioxin air emission and contributor of about 10% of mercury emissions to the environment from human activities. This paper will sensitize the reader about the impacts of improper waste management. The main bottleneck to sound hospital waste management is lack of training and appropriate skills, insufficient resource allocation and lack of adequate equipment. This document has been developed to create basic awareness about hospital waste management practices, equip the readers with enough skills for effectively managing hospital waste, safe guard themselves and the community against adverse health impact. The rules for management and handling of hospital wastes are also summarised, giving the categories of different wastes, suggested storage containers including colour-coding and treatment options.

**Keywords:** toxic, hazardous, lethal, hospital, colour coding

### **INTRODUCTION**

‘Hospital’ is a place of Almighty, a place to serve the sick persons. Hospitals are committed to patient care and community health. On the one hand they cure patients and at the same time they have emerged as a source of several diseases but we are unaware of the adverse effects generated by them on ‘Man and Environment’. A modern hospital is a complex multidisciplinary system which uses thousands of

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items for delivery of medical care. All these items consumed in the hospital leave some unused leftovers i.e. hospital waste. Hospital waste is a potential health hazard to the health care workers, flora and fauna of the area. This problem has now become the threat for public health. Public is under a constant risk due to multifaceted problems of hospital waste.

In 2008, there were about 6 lakhs hospital beds, over 23,000 primary health care centres and more than 15,000 small and private hospitals. During last four years rapid mushrooming of hospitals in the public and private sector has proliferated the problem. Increase in number of hospitals is the need of expanding population. In current scenario usage of disposables has magnificently increased the hospital waste. Unscientific disposal of hospital waste lead to the transmission of gastro-enteric infections, respiratory problems, hospital acquired infections, rising incidence of Hepatitis B, HIV, TB, transfusion transmitted diseases have compelled the authorities to think seriously about hospital waste management. Emission of toxins like 'dioxins' and 'Furans', HCl produced during incineration are generating a chain of secondary problems of Environmental Hazards. Medical waste has been identified by US Environmental Agency as the third largest known source of dioxin air emission and contributor of about 10% of mercury emissions to the environment from human activities. Problem of improper waste management can be reduced by creating basic awareness about hospital waste management practices, equipping the readers with enough skills for effectively managing hospital waste, safe guarding themselves and the community against adverse health impact.

The average quantity of hospital waste generated in India ranges from 1.5 to 2.2 kg/day/bed whereas in developed countries it is 5.24 kg/day/bed. The problem of hospital waste is more of quality as compared to quantity. It is estimated that the total amount of hospital waste in Delhi is only 1.5% of the total municipal waste. Only a small percentage i.e. 15% to 20% of the hospital waste is contagious and require special disposal techniques but if this 10% mixes with rest of the waste, then 100% waste becomes contagious.

This issue of improper Hospital Waste Management in India was first highlighted in a writ petition in the Hon'ble Supreme Court; and subsequently, pursuant to the directives of the court, the Ministry of Environment and Forests, Govt. of India notified the Bio-Medical Waste (Management and Handlings) Rules on 27th July 98; under the provisions of Environment Act 1986. The rules have been framed to regulate the disposal of various categories of Bio-Medical Waste as envisaged therein; so as to ensure the safety of the staff, patients, public and the environment. These rules are now modified in 2011.

### **Classification of hospital waste**

**General waste:** Largely composed of domestic or house hold type waste. It is non-hazardous to human beings, e.g. kitchen waste, packaging material, paper, wrappers, plastics.

**Pathological waste:** Consists of tissue, organ, body part, human foetuses, blood and body fluid. It is hazardous waste.

**Infectious waste:** The wastes which contain pathogens in sufficient concentration or quantity that could cause diseases. It is hazardous e.g. culture and stocks of infectious agents from laboratories, waste from surgery, waste originating from infectious patients.

**Sharps:** Waste materials which could cause the person handling it, a cut or puncture of skin e.g. needles, broken glass, saws, nail, blades, scalpels.

**Pharmaceutical waste:** This includes pharmaceutical products, drugs, and chemicals that have been returned from wards, have been spilled, are outdated, or contaminated.

**Chemical waste:** This comprises discarded solid, liquid and gaseous chemicals e.g. cleaning, housekeeping, and disinfecting product.

**Radioactive waste:** It includes solid, liquid, and gaseous waste that is contaminated with radionuclide's generated from in-vitro analysis of body tissues and fluid, in-vivo body organ imaging and tumour localization and therapeutic procedures.

**Biomedical waste** Any solid, fluid and liquid or liquid waste, including it's container and any intermediate product, which is generated during the diagnosis, treatment or immunisation of human being or animals, in research pertaining thereto, or in the production or testing of biological and the animal waste from slaughter houses or any other similar establishment. All biomedical waste are hazardous. In hospital it comprises of 15% of total hospital waste.

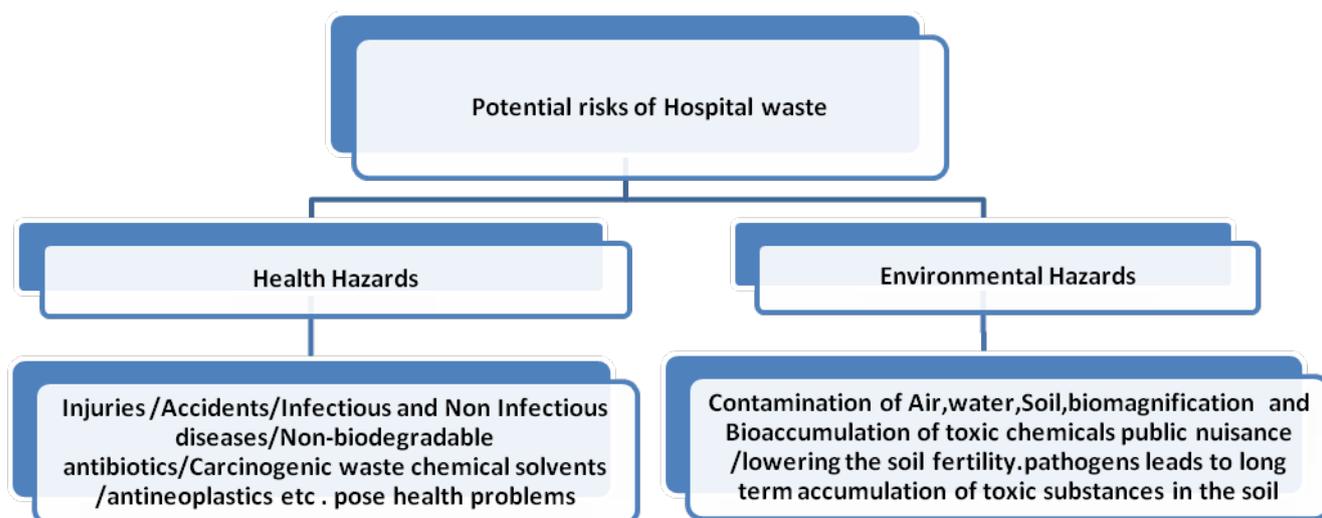
### **PRESENT SCENRIO IN PUNJAB, CHANDIGARH & ADJOINING AREA:**



- A whopping 87 per cent of Army hospitals and 61 per cent of Air Force hospitals do not have proper authorisation for the management of biomedical waste.(The Tribune 12 January,2013)
- 2 Jalandhar hospitals get Punjab Pollution Control Board notice over faulty waste management. In these hospitals liquid waste was not being treated and even for solid bio-medical waste, no separate bins were being used as mandated by the rules. (The times of India 04 January,2013)

- Disposal of highly infectious and hazardous bio-medical waste has become a major challenge in the Malwa region due to lack of any waste management plant or incinerator. (The tribune July27, 2011)
- The civil hospitals and government dispensaries in the Bathinda, Faridkot, Ferozepur, Moga, Barnala, Mansa and Muktsar districts are generating over 1,500 kg of highly infectious and human anatomical waste every month. There is no official record of the quantity of bio-medical waste generated by private hospitals and clinics that have mushroomed in the region(The tribune July27, 2011)
- The hospital employees dump the waste in the open. Sanitation workers throw the waste on roadsides.9the tribune 25 september,2012)
- Mismanagement of solid waste makes residents' life hell in Amritsar(The tribune 28 October,2011)  
  
In Chandigarh. there are 400 private nursing homes in the city, 45 dispensaries and five hospitals and 500 set-ups are associated with the National Indian System of Medicine Approximately 1 kg of garbage is generated per bed, out of which about 250 to 300 grams is bio-medical waste which has to be disposed of in a proper manner.( The Tribune30 january,2003)
- India produces 33,000 tonnes of healthcare waste per year, which comes to 904 tonnes per day. Since it's not segregated at source, all of it can be considered hazardous despite the fact that only 10-20% is infectitious. (The times of India 22 january

2013)



### APPROACH FOR HOSPITAL WASTE MANAGEMENT

Approaches described in this paper are based on Bio-medical Waste (Management and Handling) Rules 1998, notified under the Environment Protection Act by the Ministry of Environment and Forest (Government of India).

- ❖ Segregation of waste
- ❖ Collection of bio-medical waste.

### TREATMENT OF HOSPITAL WASTE

**Table Hospital Waste categories, Disposal and colour scheme**

Option	Waste Category	Treatment & Disposal	Colour of Bag for collecting waste
Category 1	Human anatomical waste	Incineration /deep burial	Yellow
Category 2	Animal waste	Incineration /deep burial	-do-

Category 3	Microbiology & biotechnology waste	Incineration /deep burial	Yellow/Red
Category 4	Sharps	Incineration / disinfection /chemical treatment /mutilation	Blue/White Translucent
Category 5	Medicines and cytotoxic drugs	Incineration / destruction and disposal in secured landfill	Black
Category 6	Solid waste (Blood and Body fluids)	Autoclave/chemical treatment/burial	Yellow
Category 7	Solid waste (disposable items)	Autoclave/chemical treatment/burial	Blue/White Translucent
Category 8	Liquidwaste( blood & body fluids)	Disinfection by chemicals/discharge into drains	Black
Category 9	Incineration Ash	Disposal in municipal landfill	-do-
Category 10	Chemical waste	Chemical treatment/ secure landfill	Yellow

## CONCLUSION

Hospital wastes pose a significant impact on health and the environment. There is not enough information on hospital waste management technologies and impacts in developing countries. Practice of proper hospital waste disposal and management is also inadequate. However, from this study it can be said that there is an urgent need for raising awareness and education on Hospital waste issues. Proper waste management strategy is needed to ensure health and environmental safety. The most important component of Hospital waste management is to bring about a transformation in the mind sets and developing a system and culture through education, training and persistent motivation of not only the health care staff but public also. The cliché lies in segregation of the waste especially infectious waste

from the non infectious waste, resulting in defining and limiting expenditures in developing countries like India. Therefore let us join hands to get rid of this problem of Hospital Waste.

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