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AN OVERVIEW OF HEALTH CARE WASTE MANAGEMENT

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Abstract

Healthcare is one of the fastest growing sectors in India. The curative healthcare services are a basic requirement of human kind but inevitably create waste which itself may be hazardous to health. Health care waste is a special category of waste, which needs to be handled appropriately with precautions because it carries a higher potential for infection and injury than any other type of waste. With a rapid increase in the number of hospitals, clinics and laboratories in the country, the generation of health care waste has been increasing considerably. The health care employees and workers have serious health impact. Health care waste and exposure to such waste pose serious threats to the environment and human health. Hence, such wastes require specific treatment and management prior to its final disposal. This article highlights certain aspects of health care waste management practices in India.

Keywords: Health Care Waste, Hospitals, Hazardous.

Introduction

The health care is the basis for human life but the health care waste creates threat to human health. The health care employees and workers have serious health impact. If the health care wastes are not properly managed, it affects the health of the community. There has been a threat to human health due to health care waste. Awareness about the need of bio medical waste management among the health care personnel is of paramount importance.

'Hospital' is a place of the Almighty, a place to serve the sick persons. Hospitals are committed to patient care and community health. The impact of bio medical waste

management on environment results in several diseases to human beings. A modern hospital is a complex multidisciplinary system which uses thousands of items for delivery of medical care. The unused items in hospitals also generate waste.

Health Care Waste

Health Care waste affects health care workers to a large extent. It also affects the public and the environment seriously. This problem has now become the threat for public health. The public faces the health risk due to hospital waste disposal. Bio medical waste is the waste generated due to diagnosis, treatment or immunization of humans or animals.

Types of Hospital Waste

General waste: These wastes can be collected from the houses. These are harmless to human.

Pathological waste: The tissue, body part, organ waste, foetus. Blood and fluid from human body are pathological waste.

Infectious waste: The pathogens that could cause diseases is known as infectious waste. The infection from wastes of laboratories, surgery creates infection to the environment.

Sharps: Any waste causing cut or puncture of human skin is known as sharps. Examples are needles, broken glasses, blades etc.

Pharmaceutical waste: Pharmaceutical products, drugs and chemicals return from wards have been spilled, are outdated or contaminated are pharmaceutical waste.

Chemical waste: Any discarded solid, liquid and gaseous chemicals are chemical waste.

Radioactive waste: Any 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 tumor localization and therapeutic procedures are radioactive wastes.

Biomedical waste: Any solid, fluid and liquid or liquid waste, including its container and any intermediate product, generated during the diagnosis, treatment or immunization of human or animals is bio medical waste.

Rules of Health Care Waste Management

The Government of India, as contemplated under Section 6, 8, and 25 of the Environment (Protection) Act, 1986, has laid down the Bio-Medical Waste (Management and Handling) Rules, 1998. The legal provisions are applicable to every hospital generating bio medical waste, including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological labs, and blood banks; the rules are applicable to even handlers. Bio medical waste management means management of a range of activities, which are mainly engineering functions such as collection, transportation, the operation or treatment of processing systems, and disposal of wastes.

This issue of improper Health Care Waste Management in India was first highlighted in the Supreme Court. The rules have been framed to regulate the disposal of bio medical waste so as to ensure the safety of the staff, patients, public and the environment. These rules are now modified in 2011.

The Bio-medical Waste Management Rules, 2016 restricts occupier for establishment of on-site or captive bio-medical waste treatment and disposal facility, if a service of common bio-medical waste treatment and disposal facility is available within a distance of seventy-five kilometer, as installation of individual treatment facility by health care industry. It requires comparatively high capital investment. It needs a separate dedicated and trained skilled manpower and infrastructure for proper operation and maintenance of treatment systems. The concept of common bio medical waste treatment facility addresses many problems to prevent proliferation of treatment technologies in a particular town or area. In turn, it reduces the monitoring pressure on regulatory agencies. The cost of treatment of per kilogram bio-medical waste gets significantly reduced by running the treatment equipment at common bio medical waste treatment facility. The common bio medical waste treatment facility has been proven as advantageous all over the world.

Need For Health Care Waste Management

The risks associated with hazardous chemicals and drugs are applicable to the persons handling wastes at all levels. "Disposable" being repacked and sold by unscrupulous elements without even being washed. Lack of complete knowledge and awareness about HCW management among hospital staff greatly impacts practices of appropriate waste disposal. There is a need of continuous training programmes in the form of seminars, workshops and symposia on HCW management to create awareness among medical and paramedical staffs. The HCW management cannot be successfully implemented without the willingness, self-motivation and co-operation from all sections of employees of any healthcare establishments. This should be coupled with effective implementation of rules and regular monitoring by authorities.

Health Care Waste Segregation and Storage

The segregation of hospital waste should be examined because facility standard operating procedures for hospital waste segregation have a direct impact on type and cost of health care waste treatment. Each category of waste has to be kept segregated in a proper container or bag. Such container or bag should have certain properties:

It should be without any leakage
It must be able to contain the designed volume and weight of the waste without any damage.
The container should have a cover preferably operated by foot.

When a bag or container is filled at 3/4th capacity it must be sealed and an appropriate label has to be attached.

Arrangement for separate receptacles in the storage area with prominent display of colour code has been made in accordance with the legislation yellow for hazardous health care waste and black for the non hazardous waste.

Health Care Wastes Handling and Transportation

This activity has three components: collection of different kinds of waste from waste storage bags and containers inside the hospital, transportation and intermediate storage of segregated waste inside the premises and transportation of the waste outside the premises towards the treatment or final disposal. The biomedical waste has to be transported to the treatment or disposal facility site in a safe manner. The vehicle should have certain specifications, such as it should be covered and secured against accidental opening of door, leakage etc. The interior of the container should be without sharp edges or corners in the aim to be easily washed and disinfected there should be adequate arrangements for drainage and collection of any leakage.

Hospital Waste Treatment and Disposal

Different methods have been developed for rendering biomedical waste environmentally innocuous and aesthetically acceptable. The biomedical waste legislation has elaborately mentioned the recommended treatment and disposal options according to the different categories of waste generated in hospitals. Different methods and treatment technologies have been developed (a) Incineration, (b) Autoclave treatment, (c) Hydroclave treatment, (d) Microwave treatment, (e) Mechanical/ Chemical Disinfecting, (f) Sanitary and secured Land filling and (g) General Waste.

Health Care Waste Treatment System

Any health care waste treatment system should comprise of segregation at source, storage in colour coded containers, systematic collection, transportation to treatment site,

treatment considering the type of waste and disposal considering the type of waste.

Segregation of health care waste is based on the category of waste. Storage and collection of waste in colour-coded containers is based on the treatment adopted.

The treatment options for biomedical waste as per the schedule I of the Rules are incineration, deep burial, autoclave, microwave, chemical treatment, destruction and shredding, and disposal in secured landfills.

Disinfection refers to procedures, which reduce the number of microorganisms on an object or surface but not the complete destruction of all microorganisms or spores.

Sterilization on the other hand, refers to procedures, which would remove all microorganisms, including spores, from an object. Sterilization is undertaken either by dry heat (for 2 hours at 1700 C in an electric oven - method of choice for glass ware and sharps) or by various forms of moist heat (i.e. boiling in water for an effective contact time of 20 minutes or steam sterilization in an autoclave at 15 lb/ sq inch at 1210 C for 20 minute.

Benefits of Health Care Waste Management

- Reduction in the incidence of hospital-acquired and general infections.
- Reduction in the cost of infection control within the hospital.
- The reuse and repackaging of infectious disposables reduced the chance of diseases and death.
- Low incidence of community and occupational health hazards.
- Proper waste treatment and its disposal reduce the cost of waste management and it also generates revenues.
- Improved image of the health care establishment and betterment in the quality of life.

Suggestions for Health Care Waste Treatment Practices

All the institutions generating health care waste must be registered with central/state pollution control boards. All health care personnel involved in the generation, segregation or handling of biomedical waste must be trained in biomedical waste management including health and safety measures. All institutions generating biomedical waste must segregate waste into the prescribed colored containers. Legislation

should be implemented in its strict sense. Regulation of labeling of biomedical waste containers should be implemented. Use of offsite treatment facility for disposal of biomedical waste should be encouraged. Sharp waste should be disinfected before disposal and should be containerized in Blue/White puncture proof container as per the regulation.

Conclusion

Proper health care waste management system can control the diseases. Regarding the environmental issues, a correct and sustainable management system of health care waste will avoid the negative long term health effects, from the environmental release of toxic substances such as dioxin, mercury and others. The medical waste has been often mixed with household waste and disposed off with municipal solid waste landfills as harmful to the entire community. The safety and acceptability of many widely used health care waste management practices are of serious concern from the public health point of view. Disposal methods, including terrestrial dumping, uncontrolled burning and dumping of hospital waste specially in landfills, remain a prominent means of disposal and many landfills remain primitive in their operation. There has been increased public concerns over the improper disposal of health care wastes and resulted in a movement to regulate these wastes more systematically and stringently by the Indian Government. If we need to protect our environment and health of our people we must sensitize and motivate ourselves to this important issue not only in the interest of health care wastes but also in the interest of the society.

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