



Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH

Declared as **Deemed-to-be-University** u/s 3 of the UGC Act, 1956



Biomedical Waste Management Policy



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Policy & Procedure Manual on Infection Control & Bio Medical Waste Management

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POLICY & PROCEDURE MANUAL ON INFECTION CONTROL & BIO MEDICAL WASTE MANAGEMENT

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The holder of the copy of this manual is responsible for maintaining it in good and safe condition and in a readily identifiable and retrievable.

The holder of the copy of this Manual shall maintain it in current status by inserting latest amendments as and when the amended versions are received.

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The amendment sheet, to be updated (as and when amendments received) and referred for details of amendments issued.

The manual is reviewed once a year and is updated as relevant to the hospital policies and procedures. Review and amendment can happen also as corrective

actions to the non-conformities raised during the internal audit or assessment audits done by internal or external audit team respectively.

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1. INTRODUCTION

Waste is anything discarded by an individual, household or organization. As a result waste is a complex mixture of different substances, some of which is hazardous to health, while the process of waste generation, handling and management is important for the health of everyone

- 1.1. Injuries from sharps leading to infection to all categories of hospital personnel and waste handlers
- 1.2. Nosocomial infections in patients from poor infection control practices and poor waste management.
- 1.3. Risk of infection, outside hospital for waste handlers and scavengers and at times general public living in the vicinity of hospitals.
- 1.4. Risk associated with hazardous chemicals, drugs, to persons handling wastes at all levels.
- 1.5. “Disposables” being repacked and sold by unscrupulous elements without even being washed.
- 1.6. Drugs which have been disposed of, being repacked and sold off to unscrupulous buyers.
- 1.7. Risk of air, water and soil pollution directly due to waste, or due to defective
- 1.8. Incineration emissions and ash

2. SCOPE

This applies to all types of wastes generated in the Hospital

3. RESPONSIBILITY

Hospital Infection Control Committee for effective implementation of this process

4. LEGAL COMPLIANCES

4.1. Preamble

- 4.1.1. Hospitals are meant to ensure community health. Presently a lot of attention is being paid to the disposal of medical waste the problem of medical waste disposal has acquired a serious proportion in urban areas of India. Infectious waste can transmit numerous diseases in the community and put those who handle waste, and live in its proximity, at risk
- 4.1.2. Handling waste can be a potential health hazard (epidemic) to public at large especially health care workers, municipal employees and rag pickers. Comprehensive solutions to waste management lie solely in implementing systems of waste segregation, disinfection and treatment through the cooperation of hospital staff, and the medical personnel.
- 4.1.3. Proper waste disposal, water treatment, disinfection, and sterilization of equipment can reduce the risk of infection among patients, health care workers and community. To minimize the spread of infection, it is important that hospitals / health caterers and the surroundings are kept clean and no waste is spilled anywhere outside or inside the hospital premises .A clean hospital has positive effects on its patients and its personnel.

4.2. Legal framework

Article 21 of the constitution of India guarantees the right of life and personal liberty. The expansive interpretation given to it by the judiciary includes the fundamental right to a clean environment and health and medical care within its ambit.

4.2.1. CENTRAL LEGISLATIONS

- a. The Water Prevention and Control of Pollution Act 1874
- b. The Air Prevention and Control of Pollution Act 1981
- c. The Environment Protection Act 1986
- d. The Hazardous Wastes Management and Handling Rules 1989
- e. The Biomedical Wastes Management and Handling Rules 2016

Copies of all above Acts have been retained by the management of IMS & SUM HOSPITAL.

5. PROCESS SUMMARY

SI. no	Activity	Responsibility
A.	Types of waste generated	
A.1	All general and biomedical waste from the hospital is handled as per the protocols set by the Biomedical waste management rules 2016.	Waste Management Officer
A.2	<i>General Waste</i> 1. Paper 2. Cardboard and packing materials 3. Aluminium Foil 4. Tea Bags 5. Disposable plates, glasses, bottles 6. Used polythene bags 7. Vegetable, fruit peels and left over food	Waste Management Officer
A.3	Bio Medical Waste 1. Soiled cotton, dressings, bandages, plaster casts, amputated body parts, pathological specimens, pathology laboratory waste, microbiology laboratory waste 2. Plastics, disposable syringes, tubing's, catheters and bags 3. Sharps consisting of needles, blades, broken vials, ampoules, thermometers 4. Blood bags tested positive for HIV and Hepatitis B, C, VDRL & MP 5. Human parts, foetus, placenta, etc. Category of waste are defined in enclosure"1"	Waste Management Officer
B.	Operational guidelines	
B.1	An operational and maintenance protocol is drawn up and filed as guidelines / requirement for day-to-day operations; also the exact description of methodology practiced under each activity such as segregation, internal and external transportation, pre-treatment, storage, post treatment and final disposal	ANS/ICN/ICT
B.2	The different levels of waste disposal at all levels of processes, and hospital areas are identified and responsibilities are assigned – as an organizational structure from management, supervision / monitoring, collection, treatment and disposal.	NS/ICT

SI. no	Activity	Responsibility
B.3	Daily collection loads by category, treatment and disposal data records maintained	Waste management Officer
C.	Segregation of Waste	
c.i	Black bags are segregated as per classification above for general waste	
C.2	Bio Medical Waste is segregated as 1. Blue bags for plastic disposable waste 2. Yellow bags for incinerable waste. The Blue and Yellow bags have the Bio-hazard Emblem printed on them. All trolleys used for collecting and transporting BMW have the Bio-hazard symbols on them and are adequately covered. Puncture proof specific containers with bio hazard symbol are used for collection and transportation of sharps.	Sanitary attendant
D.	Collection of Waste	
D.1	A specific allotted area of the ward – the same place in each ward identified as waste disposal corner – but easily identified and accessible by nursing and sanitary staff	Nurse-in-charge / sanitary attendant
D.2	The general waste is collected from wards and transported to the garbage collection bin in every shift i.e. three times a day – All waste handlers wear thick impervious gloves, mask, gown, goggle, boots and immunized for Hepatitis B	Sanitary attendant
D.3	Two rounds are made per shift - one for collecting incinerable waste and second for plastic (disinfected) waste and sharps or 2 different waste collectors and transporters are required to collect and transport bio-medical waste.	Sanitary attendant
D.4	The BMW is collected and transported in a covered garbage trolley, displaying the Bio-Hazard Symbol.	Sanitary attendant
D.5	A duty roster is drawn up and signed at end of every shift.	NS
D.6	Daily time table and roster drawn up and signed at the end of every shift to indicate each category of waste collected	Waste disposal supervisor / sanitary attendant
E.	Treatment of Waste	
E.1	Biomedical waste is segregated at the point of generation. Needles are destroyed at every nursing station and the tips of the syringes are destroyed in the syringe destroyer provided at every nursing station.	Sanitary attendant

SI. no	Activity	Responsibility
E.2	Only Plastic waste of HIV ,Hepatitis B& C, (cut manually into 2-3 pieces), and sharps are disinfected by chemical disinfection in 1% Sodium Hypochlorite Solution in each ward in specific labelled chemical containers with bio hazard symbol. The solution is changed as per Biomedical waste management rules.	Ward nurse / sanitary attendant
E.3	Microbiology and biotechnology (laboratory) waste is discarded in the blue bags	Sanitary attendant in lab
E.4	Liquid waste from laboratories is treated chemically before being let into the common municipal drains	Sanitary attendant in lab
F.	Disposal of Waste	
F.1	All incineration waste is accumulated in a central garbage repository. This is picked up by the Synergy waste management (an approved external agency) every day except Sundays.	Sanitary attendant / Waste treatment facility personnel
F.2	Disposable of sharps — Needles are destroyed immediately after use, chemically disinfected in 1% NAOCL solution, collected in puncture proof containers and handed over to agency for disposal. Check up about needles	Sanitary attendant
F.3	Left over food is disposed as feed for pigs.	
F.4	All general waste in black bags is carried away by the local municipal authority	Sanitary attendant / municipal workers
F.5	All categories of waste are weighed each day and noted. This is common practice as weight limits are present for autoclave, etc. — to keep a record of and monitor different categories and total biomedical waste by the hospital.	Sanitary worker / supervisor
G.	Emergency response plan	
G.1	The emergency can include <ul style="list-style-type: none"> • Needle prick , cut, or injury to the handler • An accidental spill of biomedical waste inside or outside the hospital building There should be an emergency response protocol to handle each of these incidents adequately and quickly.	Infection Control Nurse/ Waste management supervisor
H.	Monitoring of Waste Management	
H.1	1. Hospital Infection Control Committee The committee meets monthly and streamlines issues related to waste management.	Medical Superintendent

SI. no	Activity	Responsibility
H.2	Bi-weekly inspection of waste flow from wards to Central waste repository is inspected and defaults noted.	Infection Control Team
H.3	At least a monthly inspection of the waste management process all over the hospital needs to be inspected by the committee	Committee
H.4	Report Generation & Submission to Regulatory Authority - A report of compliance to regulatory requirements are taken and submitted annually to Government by 31 ST January in format placed at Exhibit – II	Waste Management Officer
I.	Biomedical waste management training for 'good practices'	
1.1	Waste management training of all categories of staff of all departments handling biomedical waste, adequate treatment, and disposal, is necessary at least one in six months	Infection Control team
J.	Records Generated a. Waste Management daily operations and maintenance protocol b. Monthly duty roster c. Waste Management Record including i. Categories and amount of daily waste ii. Daily comments by waste supervisor iii. Bi weekly process inspection record iv. Monthly committee inspection record v. Noting defaults vi. Noting incidents	
K.	Other Associated processes • Infection control process	

6. CATEGORY, CLASSIFICATION, TREATMENT / DISPOSAL OF HOSPITAL WASTE-
SCHEDULE -1

Category	Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
(1)	(2)	(3)	(4)
Yellow	<p>a. Human Anatomical Waste: Human tissues, organs, body parts and fetus below the viability period (as per the Medical Termination of Pregnancy Act 1971, amended from time to time).</p> <p>b. Animal Anatomical Waste: Experimental animal carcasses, body parts, organs, tissues, including the waste generated from animals used in experiments or testing in veterinary hospitals or colleges or animal houses</p>	Yellow coloured non-chlorinated plastic bags	Incineration or Plasma Pyrolysis or deep burial
	<p>c. Soiled Waste: Items contaminated with blood, body fluids like dressings, plaster casts, cotton swabs and bags containing residual or discarded blood and blood components</p>		Incineration or Plasma Pyrolysis or deep burial* In absence of above facilities, autoclaving or micro-waving hydroclaving followed by shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent for energy recovery.

Category	Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
(1)	(2)	(3)	(4)
Yellow	d. Expired or Discarded Medicines: Pharmaceutical waste like antibiotics, cytotoxic drugs including all items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials etc.	Yellow coloured non-chlorinated plastic bags or containers	Expired 'cytotoxic drugs and items contaminated with cytotoxic drugs to be returned back to the manufacturer or supplier for incineration at temperature >1200 0C or to common bio-medical waste treatment facility or hazardous waste treatment, storage and disposal facility for incineration at >12000C Or Encapsulation or Plasma Pyrolysis at >12000C. All other discarded medicines shall be either sent back to manufacturer or disposed by incineration.
	e. Chemical Waste: Chemicals	Yellow coloured	Disposed of by

Category	Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
(1)	(2)	(3)	(4)
Yellow	used in production of biological and used or discarded disinfectants	containers or non-chlorinated plastic bags	incineration or Plasma Pyrolysis or Encapsulation in hazardous waste treatment, storage and disposal facility.
	f. Chemical Liquid Waste: Liquid waste generated due to use of chemicals in production of biological and used or discarded disinfectants, Silver X-ray film developing liquid, discarded Formalin, infected secretions, aspirated body fluids, liquid from laboratories and floor washings, cleaning, house-keeping and disinfecting activities etc.	Separate collection system leading to effluent treatment system	After resource recovery, the chemical liquid waste shall be pre-treated before mixing with other wastewater. The combined discharge shall conform to the discharge norms given in Schedule III.
Yellow	g. Discarded linen, mattresses, beddings contaminated with blood or body fluid.	Non-chlorinated yellow plastic bags or suitable packing material	Non-chlorinated chemical disinfection followed by incineration or Plazma Pyrolysis or for energy recovery. In absence of above facilities, shredding or mutilation or

Category	Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
(1)	(2)	(3)	(4)
<p>h. Microbiology, Biotechnology and other clinical laboratory waste:</p>	<p>Blood bags, Laboratory cultures, stocks or specimens of microorganisms, live or attenuated vaccines, human and animal cell cultures used in research, industrial laboratories, production of biological, residual toxins, dishes and devices used for cultures.</p>	<p>Autoclave safe plastic bags or containers</p>	<p>combination of sterilization and shredding. Treated waste to be sent for energy recovery or incineration or Plasma Pyrolysis. Pre-treat to sterilize with non chlorinated chemicals on-site as per National AIDS Control Organisation or World Health Organisation guidelines thereafter for Incineration.</p>
<p>Contaminated Waste (Recyclable)</p>	<p>(a) Wastes generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles and fixed needle syringes) and vacutainers with their needles cut) and gloves.</p>	<p>Red coloured non-chlorinated plastic bags or containers</p>	<p>Autoclaving or micro-waving/ hydroclaving followed by shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent to registered or authorized recyclers or for</p>

Category	Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
(1)	(2)	(3)	(4)
			energy recovery or plastics to diesel or fuel oil or for road making, whichever is possible. Plastic waste should not be sent to landfill sites.
White (Translucent)	Waste sharps including Metals: Needles, syringes with fixed needles, needles from needle tip cutter or burner, scalpels, blades, or any other contaminated sharp object that may cause puncture and cuts. This includes both used, discarded and contaminated metal sharps	Puncture proof, Leak-proof, tamper-proof containers	Autoclaving or Dry Heat Sterilization followed by shredding or mutilation or encapsulation in metal container or cement concrete; combination of shredding cum autoclaving; and sent for final disposal to iron foundries (having consent to operate from the State Pollution Control Boards or Pollution Control Committees) or sanitary landfill or designated

Category	Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
(1)	(2)	(3)	(4)
			concrete waste sharp pit.
Blue	<p>a. Glassware: Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes.</p> <p>b. Metallic Body Implants</p>	Cardboard boxes with blue coloured marking	

7. SOURCES OF WASTE IN THE HOSPITAL

Waste generated from clinical units, the bulk of which is mostly infectious waste

The principal source of Clinical of bio medical waste is:

- a. Operation Theatres
- b. Laboratory
- c. Intensive care Units
- d. Wards
- e. Emergency
- f. Blood Bank
- g. Laboratory
- h. Burns and plastic surgery

The source of waste generated from various units of the hospital which are both infectious and general waste.

The units are:-

- a. Wards including Medical, Surgical, Casualty, Dialysis Operation theatres, Nursing stations
- b. Utility Rooms
- c. OPD's
- d. Clinics
- e. Procedure rooms
- f. Dietary dept
- g. House-keeping dept
- h. X-ray Departments
- i. Laboratories
- j. Maintenance dept
- k. Sanitary dept
- l. Various stores
- m. Medical Records dept
- n. Offices such as Administration, accounts, H R ,
- o. Garden
- p. Hostels on the hospital premises
- q. Other units within the hospital

8. GENERATION OF HOSPITAL WASTE

- a. A whole lot of waste is being generated in a hospital which consists of general waste and Hospital or bio-medical waste.
- b. Both types of waste are usually generated from the same source, that is from various units of the hospital like Wards, operation theatres, OPD's /clinics etc. for e.g. the wards generate infectious and non infectious waste and so does every other unit of the hospital.
- c. When they are generated, collected and disposed of together there is mixing of waste which contaminates the whole waste stream and then actually the whole waste becomes infectious. This causes a whole lot of problems at the site of disposal. If minimization and segregation is done the problem could be reduced to one fifth. Who generates waste in a hospital facility?
- d. Following are the generators of Bio medical waste Doctors, Nurses, Technicians, Pharmacists, Receptionists, Secretaries, Cooks, Storekeepers, Housekeeping staff, Maintenance staff, Administrators, Officers, Gardeners, Security staff, Food outlets etc.

The following table outlines the generator, source and type of waste material generated and emphasizes that segregation should be done at source.

GENERATOR	SOURCE / DEPARTMENT / WARDS / OFFICE	TYPE OF WASTE MATERIAL GENERATED	SEGREGATION
DOCTORS	Wards / Departments All Adult and Paediatric wards. Operation Theatre OPD, Clinics, OPD Procedure room, Oncology, Dialysis	All types of Infectious wastes such as: <ul style="list-style-type: none"> • Dressing pads, Cotton, Gauze bandage, • Drains, catheters, gloves, all tubes plastic and rubber, Syringes • Needles used for injection and Biopsy, blades, other sharps like broken ampoules, glass • Body fluids, such as blood, serum, blood products, CSF and other fluid. 	Segregation is to be done at source.

GENERATOR	SOURCE / DEPARTMENT / WARDS / OFFICE	TYPE OF WASTE MATERIAL GENERATED	SEGREGATION
	<p>Doctors' Offices</p>	<ul style="list-style-type: none"> • Debridement waste from wounds • Human Body Parts, body tissues, • Chemical solutions. • Oncology waste chemotherapy drugs left over, ampoules, etc • Broken mercury thermometers, Blood pressure and other mercury content equipment. • Blood-soaked disposable materials such as: Sheets, towels, drape gowns, masks, goggles etc. <p>All types of non-infectious waste such as: Paper, Face and hand tissues, cardboard material, used pens, pencils</p>	
<p>NURSES</p>	<p>Wards (All wards including Labour and delivery, Casualty, Procedure room, Minor OT, Dialysis, Nursing stations, Utility Rooms, Nurses hostels</p>	<p>All infectious waste such as : Dressing pads cotton and gauze, Bandages, Cotton, dry and moist, Mac swabs, Body fluids like blood wound drainages, sputum. Chemicals and disinfectants. Oncology like chemotherapy waste. Broken mercury thermometers & Blood Pressure and other mercury equipment. Sharps such as injection and biopsy needles, razor blades, scalpel blades, broken ampoules, broken glass with sharp edges. Plastics and rubber items, syringes</p>	<p>Segregation is done at source.</p>

GENERATOR	SOURCE / DEPARTMENT / WARDS / OFFICE	TYPE OF WASTE MATERIAL GENERATED	SEGREGATION
		such as, IV, tubings, catheters, drains, gloves etc, Debridement tissues from wounds, Placenta, dead fetus from L/R & Del room, Disposable blood soaked linen and sheets	
NURSES (CONT)	Clean Utility Room	Non infected waste such as : Paper items, Tissues face and hand, Empty IV bottles, vials, Sharps like broken ampoules, broken glass bottles and other broken glass and instruments with sharp edges. Empty medicine boxes	Segregation is done at source.
TECHNICIANS	Laboratory, Microbiology, Haematology, Path lab, ECG, Genetic Lab, OPD areas	Infectious material such as: Cotton dry and soiled with blood, Mac swabs, Needles, broken glass pieces with sharp edges like test tubes, slides etc., Slides, Petri dishes, test tubes. Pipettes, spatulas, Plastics such as syringes, Infectious specimen containers, Body parts/tissues from path labs, Soiled linen with blood other liquid infected specimens, etc Non infected waste material such as: Paper, labels, empty containers, bottles, face and hand tissues, face and hand tissues.	Segregation is done at source.
X-RAY DOCTORS AND TECHNICIANS	X-Ray Room, C T Scan MRI, Ultrasound	Infectious material such as: Cotton dry and soiled with blood and other fluid, Needles, broken ampoules and other sharp containers, Plastics, syringes Non infectious waste such as:	Segregation is done at source

GENERATOR	SOURCE / DEPARTMENT / WARDS / OFFICE	TYPE OF WASTE MATERIAL GENERATED	SEGREGATION
		Paper, Face and hand tissues, empty containers	
PHARMACISTS	Pharmacy, Pharmacy store	Medicines such as Expired left over and unlabeled tablets, ampoules and vials, Solutions such as chemicals, mixtures and liquid medicines, Sharps such as broken ampoules, bottles etc, Paper, empty, tissues, boxes, cartons, Plastic containers, bottles, and sheets etc.	Segregation is done at source
HOUSEKEEPING Sanitary officers Ward Boys Housekeeping (contd.)	Wards / Depts, Dirty Utility Rooms Clinics / OPD's Offices, Common areas	The House keeping staff may not be generating some of the material mentioned, but they can come in contact with it during their work process. Infectious material such as Cotton dry and blood soiled which is found on floors & among the dirty linen which ward boys segregate before sending to laundry, Dressings and gauze bandages which may be found among the linen as mentioned above, Disposable plastics and other sheets which may be soiled with blood or other fluid & chemicals, Disposable gloves and cleaning gloves, Handling of infected waste in the wards and other areas, like collecting and transporting, handing over etc, Sharps, collecting, transporting and which may be stuck onto bed linen and found on floors of wards and nursing stations, Infected linen which is non disposable and contaminated with	Segregation is done at source.

GENERATOR	SOURCE / DEPARTMENT / WARDS / OFFICE	TYPE OF WASTE MATERIAL GENERATED	SEGREGATION
		<p>blood and other infected material. Keep in mind the disinfecting procedure, and flow of infected water drainage, Handling of chemicals their use, waste and spillage .etc</p> <p>Non infected material such as : Paper, tissues, Plastics, cardboards, Foils, Different types of empty non infected containers, Non infected dusters ,mops, brooms etc</p>	
<p>DIETARY STAFF Dietician's, Cooks, Helpers</p>	<p>Kitchen, all eating stalls and cafeteria's, Wards, Pantries</p>	<p>Mostly Non infected waste are dealt with in the Kitchen and food serving areas such as : Vegetable & fruit peals, discarded vegetables and fruits, Leftover food from patient's trays, waste food while cooking, Silver foil wrappings, Plastic wrappers and gloves used for serving, Paper and tissues etc</p>	<p>Segregation is done at source.</p>
<p>STORE OFFICERS Storekeepers, Helpers</p>	<p>Stores, General stores, Stationary, Others</p>	<p>Mostly non infected material such as: Paper, tissues, wrappers, Empty cardboard boxes, Empty bottles, tins, other containers, Plastics, rubber and foil material, wrappers etc</p>	<p>Segregation is done at source</p>
<p>MAINTENANCE STAFF Plumbers, Electricians Carpenters, Engineers</p>	<p>Maintenance dept Wards, Common areas, Offices, Junk yard</p>	<p>The staff may not be generating some of the mentioned material, but they can come in contact with it during the work process. Infected material found blocking drains, pipelines and sewers such as: Needles, syringes, dressing pads, bandages, and cotton etc, Chemical solutions which can pollute the</p>	<p>Segregation is done at source.</p>

GENERATOR	SOURCE / DEPARTMENT / WARDS / OFFICE	TYPE OF WASTE MATERIAL GENERATED	SEGREGATION
		environment ground or air. Non infected waste such as : Waste electrical wires, nails, other parts of electrical equipment, Pieces of left over wood, Condemned furniture, Paper, packing material cardboard boxes, Plastic and rubber material, All types of metals	
ADMINISTRATI ON AND OTHER OFFICES	Offices	Non infected waste material such as: Paper, face and hand tissues, Files, cardboard containers, Plastics, foils	Segregation is done at source.
Horticulture Staff, Gardeners Helpers	Gardens	Waste such as: Dried leaves, twigs, grass, Fallen plants, Dead domestic animals	Segregation is done at source.
Others Every person who generates waste in the hospital premises	Any other area of the hospital		Segregation is done at source.

9. SEGREGATION OF WASTE

- a. Segregation is considered the most important aspect of bio-medical waste management and handling rules, 1998
- b. It refers to the basic separation of different categories of waste done at source of generation of bio-medical waste for e.g.: All patient areas, diagnostic service areas, Operation theatres, Labour rooms, treatment rooms etc. The one bin system should be replaced to a three or four bin system, thereby reducing the risks of infection and injury as well as cost of treatment and disposal. Segregation is the most important aspect and crucial step in bio-medical waste management. Effective segregation alone can ensure effective bio-medical waste management.

- c. The waste should be segregated, imposing segregated practices within hospitals to separate biological and chemical hazardous waste; this will result in a clean solid waste stream, which can be recycled easily. If proper segregation is achieved through training, clear standards, and tough enforcement, then resources can be tuned to the management of the small portion of the waste stream needing special treatment.
- d. **Policy:** Segregation of the waste shall be done at the point of generation itself
 - 1. Segregation shall be carried out at the point of generation itself to keep general wastes away from becoming infected.
 - 2. For this different colour coded bins shall be placed at all the areas of generation of waste
 - 3. The bins should be labelled (according to the waste) and lined with plastic bags (non-chlorinated/ puncture proof) with colours matching that of the bins as per recommendations.

Schedule II of Biomedical Waste Handling Rules 1998 defines the colour coding for the waste generated as follows

9.1. Procedure-segregation in in-patient departments

- a. The in-patients departments generate all types of waste, which has to be segregated at the point of generation itself for an effective waste management practice in the hospital. Therefore bins for both infectious and non-infectious waste are placed in all the wards.
- b. The bedside of each patient shall have a bin meant for carrying only non-infectious waste like fruit peels, papers etc., unless the patient is classified as infectious.
- a. The toilet of each patient room will have a Yellow bin with lid & pedal except in Gyne / Obs room toilet which have both black and yellow bag bin with lid & pedal.
- b. Bins for the infectious and non infectious wastes shall be kept in a specific location *{for example* the nursing station) so that it is easy to carry the waste from the bed side / patient room to the bin.
- c. Dressing trolley will have buckets line with yellow, white and blue bag. In

Puncture Proof Container sharp waste is discarded. Once the dressing is complete these bins are emptied into the bin placed in nursing Station.

- d. The colour coded bin and nurse station are emptied into the bin on wheels and wheeled to the central garbage storage area for disposal.

9.2. Procedure- segregation in intensive care unit

- a. Patients of Intensive Care units (ICU) are in a critical state and require support of vital functions until the disease process is arrested. Such patients are likely to have poor resistance to infection and are often unable to do things on their own and have full time nursing attendants.
- b. To prevent the spreading of infection further it shall be ensured that the waste generated in the ICU is collected in the colour coded bags located after every three bags, also the bins for infectious and non-infectious waste shall be located in the loading area of the ICU.
- c. The IV tubing's and catheters and used syringes shall be placed in colour coded bins placed between every 3 beds from where they can be discarded in the respective colour coded bins in the duty rooms.
- d. After the procedure all the sharps and glass ampoules shall also be placed in separate puncture proof containers. The hub of the syringes should be destroyed by syringe cutters.
- e. All these bins shall be cleaned after every shift or the moment these bins become 75% full. The number of bins should be distinct, and their numbers and size should be proportional to the density of the wards and the medical procedures in the ward.

9.3. Procedure- segregation in operation theatres

- a. The waste management strategy for the O.T. shall be designed in such a way so as not to impede an operation but to ensure that the waste reaches the main bin after being decontaminated and disposables properly disinfected and destroyed.
- b. As in all other areas waste disposal program shall be initiated after meetings with the staff. Management strategies based on these meetings shall be formulated so that the O. T staff can work smoothly without feeling any extra burden. Bins for infectious waste shall be lined with yellow bags and these bins

- will contain contaminated swabs, soiled bandages and amputated body parts.
- c. The bags with waste shall be sealed and stored outside the O.T to prevent liberation of bacteria during handling.
 - d. Used instruments and sharps shall be
 - Counted after surgery
 - Washed under running tap water
 - Placed in a tray, sealed in bags and sent for autoclaving
 - e. A designated colour coded bin with bag is provided for IV sets, tubing's catheters gloves and syringes in the O.T. As lots of medical kits are opened prior to the operation there is a lot of general waste generated. Hence a bin with black bag for general waste is kept in the O.T. in which all the packaging material shall be collected. In the changing room contaminated laundry shall be placed in the laundry bag which shall be sealed in waterproof bags and sent to the laundry for cleaning.

9.4. Procedure- segregation in out-patient departments

- a. The OPD may also include a casualty/emergency ward. Each room in the OPD should have three bins. The bins are for the infectious waste which includes soiled bandages. The other bin is for general waste and the third bin for the disposable items and used gloves which can be mutilated and disinfected at regular intervals by a nursing-aid attendant
- b. The used needles and syringes should be placed separately and destroyed by the needle cutter/destroyer, which is to be provided in each ward and department.
- c. The casualty should have bins for infectious waste general waste and plastic waste the number of bins for the infectious waste will depend on the number of beds in the room.
- d. Preferably each bed should have these bins. Bins for plastic waste and general waste should also be installed in each emergency. The plastic waste should be mutilated and chemically disinfected. There should be a tray for needles and other sharps. A needle cutter should also be installed. While treating a patient in the emergency the hospital staff should always wear protective clothing and gloves as the patient could be a carrier of any infectious disease

- e. The waste disposal scheme in this area is as follows
1. Segregation of the waste into different categories
 2. Provide specific collection and disinfection systems for each type of waste generated.
 3. There should be distinct containers for different types of waste
 4. The design of containers should depend on the type of waste and disinfection method.
 5. The number of bins should be proportional to the waste generated in the casualty

10. TRANSPORTATION OF WASTE

All waste containers shall be tied when they are 3/4th full- preferably every shift and when they are 3/4th full in between shifts.

10.1 Procedure- On Site Transportation of Waste

- a. Segregated wastes have to be transported within the facility from the point of generation to the final waste disposal site .All bags should be fastened, small trolleys can be used or the bin themselves be carried. Care must be taken to avoid spills. Non-infectious waste should not be transported with infectious waste.

10.2 Guidelines for Transport of Waste:

- a. When waste is collected, from a particular area, it will be wheeled through a specific corridor to the specific lift earmarked to carry waste to the central garbage storage area where it is weighed and transferred to the loading track for disposal.
- b. This will be done twice during the day once at 7:00 am and second time at 3:00 pm and if required in between the time mentioned.
- c. A large plastic bag will be used to line the wheel-able bin to prevent any liquid leaks from the waste bags from soiling the bin.
- d. This plastic bag is to be replaced each shift.
- e. The wheel-able bin will be cleaned and disinfected with Sodium hypochlorite solution once in 24 hrs. This will keep the bin sterile and odourless.

- f. While transferring waste to storage bins to the central garbage storage area, housekeeping staff will wear protective clothing e.g. mask, heavy duty gloves, and rubber boots goggles and gown.

11. STORAGE OF WASTE:

The waste bags need to be stored prior to disposal. The following points are to be considered:

- a. Biomedical waste storage areas should be separate from general waste storage areas.
- b. Clear signs indicating "For Biomedical Waste Only". Should be indicated.
- c. The areas should be locked, and a caretaker should be able operate the storage area around the clock if necessary.
- d. The storage area should be away from public access and routes and should be easily accessible to internal and off-site transport.
- e. It should be well lit and ventilated and kept secure from animals, rodents and insects.
- f. Washing facilities should be available at the storage area and equipment for dealing with spillages should also be available there. There should be a special drain to discharge the washings which should go to the foul sewer.
- g. There should be sufficient storage capacity to store at least 2 days waste.
- h. The storage area should be labelled as well as the waste bags. The room should also be marked with a caution sign (Bio hazard sign)
- i. The ideal procedure to store Bio-medical waste is that it should be immediately treated and disposed off. However untreated bio-medical waste can be stored for not more than 48 hours.
- j. If for some reason there is a need to store the waste beyond the stipulated period, then permission from the local statutory body must be taken and it must be ensured that it does not adversely affect the health and the environment.

11.1 Importance of Proper transport and temporary storage

Transportation and Storage refers to the safe removal of waste from the areas of generation and collection and taken to the storage area until it is removed for disposal.

11.2 Purpose:

- a. To safely remove waste to the storage area earmarked for the same
- b. To store all hospital waste in one area of the hospital before final disposal
- c. To prevent spread of infection to patients, attendants, and hospital employees who generate waste by stagnating waste in various departments.

11.3 Scope: All waste generators

11.4 Responsibility: HOD waste management, Medical and Nursing Staff, Paramedical Staff, Housekeeping staff

11.5 Equipment: Protective gear that is mask, gloves, gowns / aprons, shoe covers, Hand rub

Procedure:

Before removing waste for transporting to the storage area:-

- Check if the waste is properly segregated
- Label the color coded plastic bags which contain the waste.
- Tie the bags before placing them on the transport trolley.
- Check for any leakage of the bags and take care of the leakage area as per S O P prepared for the same.

While transporting the waste

- Ensure that the trolley has the Bio-hazardous sign on it
- That the trolley is covered and the waste is not exposed
- Wheel the trolley through the shortest route possible to the dumbwaiter suite or the lift earmarked for transporting hospital waste. Avoid the patient and attendants lift.
- If any leakage occurs while transporting the waste, then follow the SOP steps prepared for spillage.

Place the plastic in the storage room earmarked for the same.

Wash the transporting trolley and dry it and keep it for the next use.

Wash hands and change clothing

Maintain record of what type of waste has been transported for disposal

12. HANDLING OF WASTE

12.1 Procedure- Handling of Infectious Waste

Infectious waste has to be kept separately in bins with lid and lined with the designated colour coded bins polythene bags wherever needed. The following special precautions are to be adopted with respect to infectious wastes

- a. Proper labelling of waste containers minimize confusion in handling and disposal of waste
- b. Under no circumstances should the infectious waste be mixed with the non-infectious waste
- c. The bag lining the bin should be only 3/4th full to ensure that the waste does not spill out
- d. Before carrying the bag containing infectious waste it has to be sealed / tied and levelled, the person handling the waste will wear protective clothing.
- e. The bags containing infectious waste should be collected and stored in the centralized infectious waste bin until is sent for disposal.
- f. The container carrying infected waste should be always cleaned and disinfected with sodium hypochlorite solution.

12.2 Procedure- Handling of Disposal Items

- a. All disposable items are segregated/collected in the designated colour coded bins/bags.
- b. Disposable items include single use products i.e. syringes, IV bottles, catheters, rubber gloves and sharps, (sharps have to be treated separately)
- c. As such items are often recycled and have the risk of being reused illegally, it is imperative that chemical disinfection be followed to minimize the risk of infected / contaminated disposal items prior to collection / segregation. The following on site disinfection procedure should be followed prior to their collection & segregation
- d. The disposables of HIV, Hepatitis B&C, ESBL +Ve, VRE +ve patients are dipped for

a minimum duration of 1 1/2 to 2 hour in the chemical disinfectant solution of 1% NAOCL (Sodium Hypochlorite) . Bins that are used for chemical disinfection are a set of twin bins, one inside the other, with the inner one being perforated and easily extractable.

- e. This helps ensure, that the bleach solution in the outside bin permeates the inner bin containing the disposable items and minimizes contact when the contents are being removed.
- f. Disposable items like the gloves, syringes, IV bottles, catheters ICD,s etc have to be shredded cut or mutilated. This ensures that they are not reused under any circumstance. The fingers of the used gloves should be cut, and the same should be done for other disposable items.
- g. Extreme care should be taken while handling the needles and syringes, since most injuries occur between the point of use and disposal. Blood bags /sharps should be handled with proper protection.
- h. Once the disposable items have been snipped they have to be dipped in an effective chemical disinfectant for a sufficient time

12.3 Precautions to be adopted for disposal of disposables

The following precautions f safeguards are to be adopted

- a. All disposable items are segregated/collected in the designated colour coded bins/bags.
- b. Only disposable items of HIV, Hepatitis B&C,ESBL +Ve, VRE +ve patients are dipped for a minimum duration of 1 1/2 to 2 hour in the chemical disinfectant solution of 1% NAOCL after mutilation prior to disposable.
- c. Syringes & sharps should be handled with extreme care, no recapping should be done.
- d. The concentration of the chemical solution in use has to be 10 gms of bleach in 1 litre of water.
- e. The disposable items must be dipped in the sodium hypochlorite solution for at least half an hour to ensure proper disinfection
- f. The solution has to be changed after each shift.
- g. Ensure that the syringe hub is cut from its plunger before disposing in the

designated bin/bag.

12.4 Procedure- Disposal of Sharps

Handling of sharps is extremely difficult Sharps are responsible for a majority of injuries Sharps need separate attention from other disposables in a waste management scheme

Procedure- Sharp Collection and disposal

- a. It is important that sharps, be handled with special care to avoid needle stick injuries
- b. While handling sharps, gloves must always be put on by the handler
- c. Segregate sharps from the rest of the waste at the point of generation and place in the designated colour
- d. Clipping, bending or breaking of needles to make them non usable must not be practiced as this may cause accidental inoculation.
- e. Used needles and syringes generated should be destroyed by a needle destroyer /cutter and disinfected / sterilized and shredded.
- f. Syringes and sharps must be dipped in a bleach disinfectant solution as indicated above before final disposal/shredding
- g. When 75% full the container should be closed, labelled and transported to the central garbage storage area

12.5 Precautions in handling sharps

As most injuries are caused by sharps, their proper handling need not be over emphasized

- a. All the employees working in side the hospital must be vaccinated against Hepatitis B
- b. All the workers should put on gloves while dealing with infectious waste especially sharps.
- c. Sharps should not be left casually on countertops, food trays, on beds as grievous injuries can result
- d. Needles should not be recapped

12.6 General Safety

Waste will be handed over to the Waste Treating Unit in the following manner:

- a. All waste held in the storage bins will be wheeled up to the garbage truck itself. This will be done by the hospitals housekeeping staff.

- b. Waste plastic bags, whether Red, Blue, Yellow or Black will not be opened in the collecting truck but will be stored and transported out of the hospital premises directly.
- c. The contractors' garbage handlers will wear heavy duty gloves, mask, and rubber boots while transferring waste from the hospital's bins to the truck.
- d. Transfer of waste to the truck will be overseen by security.
- e. Security staff will maintain a logbook which will document, the date, and weight of the waste collected by the contractor.
- f. Waste will be disposed of every 48 hrs.

12.7 Worker safety

For worker safety the following are required:

1.1. Training

This should include:

- a. Proper Handling and management of infectious and non-infectious waste through generation, segregation, collection, transportation, treatment and disposal of waste.
- b. Knowledge about the hazards of hospital waste
- c. Knowledge about self protection from injury, infectious diseases, about safe handling of waste and about the personal protective dress code.
- d. How to handle injuries, spills, accidents etc
- e. Workers should be instructed about Reporting and recording matters related to waste management wherever required.

13. MANAGEMENT OF OTHER WASTES

- a. Fixer from the Radiology department is removed once in 3 to 4 weeks. This fixer liquid is transported in a closed container by housekeeping staff to a designated area of the hospital under the supervision and guidance of Radiology Staff.
- b. Glass and cardboard from the kitchen are to be stored for a month and sold for recycling.

13.1 LABORATORY WASTE

- a. Laboratory deals with all the pathological, biochemical, microbiological and, histo-pathological diagnostic tests. These tests are performed on various body fluids and tissues using certain reagents. These tests generate both infectious and hazardous waste due to the presence of chemicals and pathogens making it a source for infection. Thus special care has to be taken while dealing with laboratory waste.
- b. The waste generated in the laboratory should be segregated into different classes according to the Waste Classification
- c. The infectious waste can be further sub categorized as
 - Sharps
 - Media and culture plates Reagents and swabs.

13.2 Laboratory Waste Handling

The following guidelines have been issued by the department of Laboratory Medicine

- a. All personnel in the laboratory should wear mask and gloves during testing procedures and disposal.
- b. Wear mask and gloves while processing infectious material *i* fungal *i* AFB cultures.
- c. Reagents must not be sucked into a pipette with Mouth.
- d. Cover the spill of blood or body fluid with absorbent material like cotton with gloved hands. Wipe the floor and discard this cotton in yellow bag. Pour plenty of freshly prepared 1%NaOCl solution on the spill area. Leave it for 30-40mins and clean with a mop or absorbent material and discard this in black bag. Follow with regular cleaning with a mop.

13.3 12.7.1.2. Waste Disposal Practices & Precautions - Microbiology

- a. Dispose off used SHAR PS- i.e. Needles/scalpel blades in 1% sodium hypo-chlorite after the needles are cut in the needle cutter.
- b. DO NOT BEND! RECAP THE NEEDLES.
- c. The syringes (Tuberculin and other syringes) should be disposed off in a container with 1 % sodium hypochlorite (freshly prepared every morning) - The waste is to be placed into the BLUE BAG which shall be picked up by the Sanitary personnel
- d. All specimen containers received in the laboratory (like Pus, Pleural, peritoneal, drain fluid, Sputum, Bronchial lavage sample, gastric lavage, Stool, Semen) Blood culture bottles with blood after culture should be sent for autoclaving in the autoclave located in the laboratory washing section and then the containers should be washed and cleaned. After washing and cleaning using tepo1 solution the containers are sterilized in the hot air oven! Autoclave and reissued for reuse. .
- e. All used and discarded culture plates, bottles / tubes with cooked neat broth and blood, should be autoclaved.
- f. The BACTEC blood culture bottles should be discarded after autoclaving with glass containers
- g. All tubes & pestle & mortar used for grinding infectious material should be immersed in 3% Lysol for at least one hour before it is discarded for cleaning.
- h. All slides used for microscopy of various samples (Urine, Semen, Pus, BAL, Sputum, CSF) should be discarded in 3% Lysol for disinfection. They are then collected in a separate bag for glass wastes.
- i. All swab sticks (pus swab, HVS, Stool, Lawn culture for sensitivity testing after use should be discarded in 3 % Lysol and then should be disposed in the blue bag.
- j. All glassware, insulin syringes used for AFB culture work — to be discarded in **formalin**. Needles should be destroyed
- k. Media used for AFB culture by BACTEC to be autoclaved, then discarded in running tap water after opening the sealing.

1. All paper, wrappers, peels to be disposed in black bag.(as General Waste)
- m. All used ATB strips to be disinfected in 3% Lysol and discarded in Blue bag

13.4 Procedure for preparing Sodium Hypo Chlorite Solution for Disinfection

- a. The hospital gets a concentrate with 10 % concentration solution of Sodium Hypo Chloride in Solution Form
- b. For 1 litre solution: Take 100 ml of the concentrate solution and add 900 ml of water to it to get 1 % Solution (total quantity will be 1 litre)
- c. For 5 litres solution: Take 500 ml of concentrate + 4500 ml water to prepare 5 litre of 1 % solution.
- d. Use 1 % Sodium hypochlorite to disinfect plastic catheters, sharps, tubing before disposal.
- e. Change the solution at every shift and prepare a fresh solution each time.

13.5 Waste Disposal Practices & Precautions -Biochemistry & Hematology

- a. All personnel in the laboratory should wear gloves during testing procedures and disposal.
- b. No mouth pipetting should be done
- c. In case of a spill or leak of blood or infectious material, pour freshly prepared 1 % sodium Hypochlorite on it and leave for 15 minutes. Use a stack of old newspapers to clean the area and discard the papers in yellow bin.

Waste Disposal Practices & Precautions- Histopathology

All microscopy slides are to be disinfected in 3% Lysol and then discarded into the blue bag

- a. The containers with specimens are to be sent for autoclaving and discarded into the blue bag (if the containers are plastic) otherwise if it is glass then in the separate bag for glass wastes
- b. Tissues received **in formalin** are to be finally discarded in yellow bag and sent for incineration.
- c. Empty plastic bags, paper, peels etc are disposed off in black bag.

13.7 WASTE DISPOSAL PRACTICES & PRECAUTIONS- BLOOD BANK

Guidelines:

- a. All personnel in the blood bank should wear gloves during sample collection,

- testing procedures and disposal.
- b. No mouth pipetting should be done.
 - c. In case of a spill/leak of blood infectious material, 1 % sodium hypochlorite is poured over the surface and allowed to act for 15 minutes. Thereafter, it is cleaned using a stack of old newspapers and then wiped.
 - d. Dispose all SHARPS i.e. Needles, scalpel blades after destroying (in a needle cutter/burner) into freshly prepared 1% sodium hypo-chlorite.
 - e. The syringes I.V. line sets, catheters etc are disinfected in a bin containing 1 % sodium hypo-chlorite and then disposed
 - f. All paper, peels wrappers are disposed off in a bin with black bag.
 - g. All tubes with blood samples are disposed off in 1 % solution of sodium hypochlorite and then sent for washing for reuse.
 - h. **Bag Standards:** All bags used for biomedical waste collection are biodegradable.
 - i. **HIV & Hepatitis Blood Samples.** Blood bags and samples positive for HIV, Hepatitis B & C, VDRL, and Malaria are handed over to agency for disposal.

14. TRAINING & AWARENESS OF PERSONNELS

The entire staffs are involved in waste management at some point or the other, including Administrators, stores personnel and other seemingly uninvolved departments. To ensure that the waste is carried responsibly from cradle to grave, and to see that all the material required for waste management is available to the staff, it is important to involve everyone, including

- a. Doctors
- b. Administrators
- c. Nurses
- d. Technicians
- e. Pharmacists
- f. Radiology department staff
- g. Ward boys
- h. Safai karamcharis
- i. Storekeepers

- j. Maintenance staff including Engineering and Plumbing
- k. Gardeners
- l. Peons
- m. All others who work in the Hospital

The sessions for each category of staff should be conducted separately.

14.1 Conduction of Training:

Training should include:

- a. **Induction:** Every staff in all categories inducted into a particular unit of the hospital should be oriented to the Waste Management protocol of the ward and the hospital. The staff turn over rate in a hospital is quite high so induction programmes should be part of the ward/unit protocol.
- b. **On going Training:** This is one of the most important components of training. On going training ensures that every staff including the new staff is aware and has knowledge of waste management practices, it also serves as a continuous reminder for the staffs.
- c. **Updating Trends:** It is very important to update knowledge and keep abreast of trends in waste management; this can be done by arranging for staff to attend workshops, conferences, seminars etc. in-house as well as at the National and International level.

14.2 Who Should Do the Training?

The Training can be done by:

- a. **Hospital Personnel:** The HOD of the Waste Management committee should organize a training faculty to train the staff; they could be a staff member who is well-versed in the subject. Infection control nurses. The Nursing Superintendent, Deputy Nursing Superintendents and Ward Managers should be able to conduct training in their units, and so can the Sanitary Inspectors and House Keeping Head for their respective units and staff.
- b. **Outside Agency:** A qualified outside agency can also be included in the training team. This training can be carried out under the supervision of the Waste management and Hospital Infection Control Committee.

14.3 Training and Awareness Program - for Nursing Personnel

- a. Waste management is a part of the duty of the nursing personnel; therefore, it is necessary to reinforce their learning on the deleterious health effects of improper disinfection and waste storage.
- b. The next step would be to explain the waste management procedures to them and to discuss their very important role in the scheme.
- c. Nursing staff should be made aware that improper waste management is not only detrimental to their health, patient's health but can also develop into a social problem. Hence, they should realize the importance of their role in the management of waste generated in their department

Nurses should be taught as to

- a. How the waste should be segregated and
- b. Why different types of wastes need different types of disposal and disinfection.
- c. How to make a chemical disinfectant (e.g. bleach solution),
- d. Make them aware and keep them informed of types of wastes which need to be disinfected in bleach solution
- e. How the sharps are to be disposed
- f. Make them aware of the kinds of waste which need to be mutilated
- g. What waste are generated by them
- h. How to segregate it
- i. The colour coding system of each type of generated waste
- j. How to handle waste
- k. The route of transportation
 1. The storage rules
- m. The final disposal of waste
- n. Handling of spills
- o. Handling of injuries e.g. needle stick injury

Nurses to be provided with:

1. Slides with flow chart
2. Equipment like needle cutter / destroyer

3. Bins and different coloured plastic bags

4. Chemical disinfectant like bleaching powder solution 5. Audio-visuals on the subject

14.4 Training and Awareness for - Nursing Aid/Attendants

- a. During the training sessions, it is necessary that the nursing aids and attendants understand the waste management scheme .is part of their work, which they are supposed to do and not perceive it as additional tasks.
- b. They have to be told about the problems of improper waste management and how it can lead to infection within the hospital and to its handlers.
- c. They should be taught to identify all types of wastes according to the type of disposal procedure required.
- d. The type of disinfection to be used is to be explained to them. They should be directed to prepare chemical disinfection solution and. know the time for which the waste should be dipped in it.
- e. Methods to deal with spills and cleaning floors, proper mutilation, use of protective clothing should be taught to them.
- f. How to avoid spread of infection to themselves and to others while handling waste
- g. How to avoid injuries e.g. needle stick injury

14.5 Training and Awareness - for Doctors

- a. The doctors are the key personnel who are already aware of the hazards of haphazard infectious waste disposal, and without their active participation no waste management programme cannot succeed
- a. It is mandatory to make the doctors aware of the practices followed in our hospital therefore the training program for doctors should emphasize on
 - i. The doctors to ensure a proper waste management system and adopting the system themselves.
 - ii. The concept of awareness is to educate personnel regularly about the system and this is done through meetings, seminars and workshops.
- b. It is important to add it to the curriculum of all the medical and paramedical personnel as a continuous process.
- c. For making the system more visible, a recommended medium for information

dissemination is posters.

- d. Posters should be placed in locations, which are frequented by personnel, they should be area specific, concise and the contents should be large enough to read.
- e. In this form of awareness building, reminders and letters are sent to the heads of each department at regular intervals.

15. DO'S AND DON'T'S FOR WASTE MANAGEMENT

15.1 DO'S

Segregate waste at source or point of generation that is:

- a. Infectious waste
- b. Non-infectious waste
- c. Sharps

Collect waste in colour coded bags

- a. Black
- b. Red
- c. Yellow
- d. Blue
- e. Sharps container

Keep collection containers always covered

Train and educate all categories of staff that is:

- a. Administrators / Managers / Department Heads/officers
- b. Doctors
- c. Nurses
- d. Technicians
- e. House keeping staff
- f. Maintenance staff
- g. Laboratory staff
- h. Stores
- i. Others

Treat all waste before final disposal, selecting the treatment best suited for the particular type of waste

- a. Use recyclable/reusable items as far as possible.
- b. Secure storage area
- c. Transport through wheeled and covered trolleys.
- d. Use the recommended protective dress code for handling and transporting waste
- e. Ensure that all waste articles are immersed in the chemical solution while disinfecting them
- f. Change chemical solutions every shift
- g. Immerse waste articles for at least 30 minutes in the chemical solution for proper disinfection.
- h. Immunize all waste handlers

15.2 DON'T'S

- a. Don't mix Infectious and non-infectious waste
- b. Do not recap needles
- c. Do not fill the waste container more than 3/4th of capacity.
- d. Do not incinerate plastic waste
- e. Do not treat incinerable waste chemically because Dioxin will be emitted which is very harmful.

Annexure-1: Exhibit -II: Report generation

Bio-Medical Waste (Management & Handling) Rules, 1998

FORM II (Rule 10) for ANNUAL REPORT

(To be submitted to the prescribed authority by 31st January every year)

Annual Report for the **Year** ----- (from January ----- to **December** -----)

Name of Hospital

<u>Sl. No.</u>	<u>Query as per Form —II</u>	<u>Response</u>
1.	Particulars of the applicant	Name of Hospital
i)	Name of the authorized person (Occupier/operator)	Dr
ii)	Name of the institution Address Tel. No Fax No	Name of Hospital
2.	Categories of waste generated and Refer Exhibit — I Quantity on a monthly average basis :	
3.	Brief details of the treatment facility	Refer Exhibit — II

Wherein the details of the on site treatment Facilities are described namely on site treatment Facilities are for Cat III, Cat-IV, and VII as below:

1. Autoclave for
 - a. Infectious plastic waste after
Chemical disinfection and mutilation Of tubes & bags
 - b. Pathological laboratories waste
 - c. Blood bags tested +ve or HIV,
Hepatitis B & C, VDRL & MP
2. Shredding facilities of the syringes

Off-site facility

i) Name of the operator

ii) Name and address of the facility

Tel. No.

Fax No.

- | | | |
|----|---|--|
| 4. | Category-wise quantity of waste treated | Refer Exhibit — I |
| 5. | Mode of treatment with details | Refer Exhibit — II
In this exhibit the waste segregation & treatment Practices at the institute are described |
| 6. | Any other information | Refer Exhibit — II
The total waste management practices adopted At POS H adopted are described |

Certified that the above report is for the period from

Signature

Name & : Dr.

Designation : MS

Place: Chennai

Annexure 2 -Quality Objectives

RI #	Quality Objectives	Performance Indicators	Measurement Criteria	
			Criteria	Frequency
1	Compliance with statutory requirements	Staff availability	Monthly duty roster / daily shift signatures record	Monthly
		Proper segregation and disposal	Daily waste management record Record from External agency	Monthly
		Adequate treatment of waste	Infection Control committee record	Monthly
		No. of defaults	Committee records / Inspection reports / Defaults noted by bi-weekly Nurse manager inspection in register	Monthly
		Avoid recurrence of default	Committee records / Inspection reports / Defaults noted by bi-weekly Nurse manager inspection in register	Monthly
2	Safety	No. of incidents	Noted in daily waste record	Monthly
3	Customer complaints	Speedy resolution	Complaints register / log	Monthly

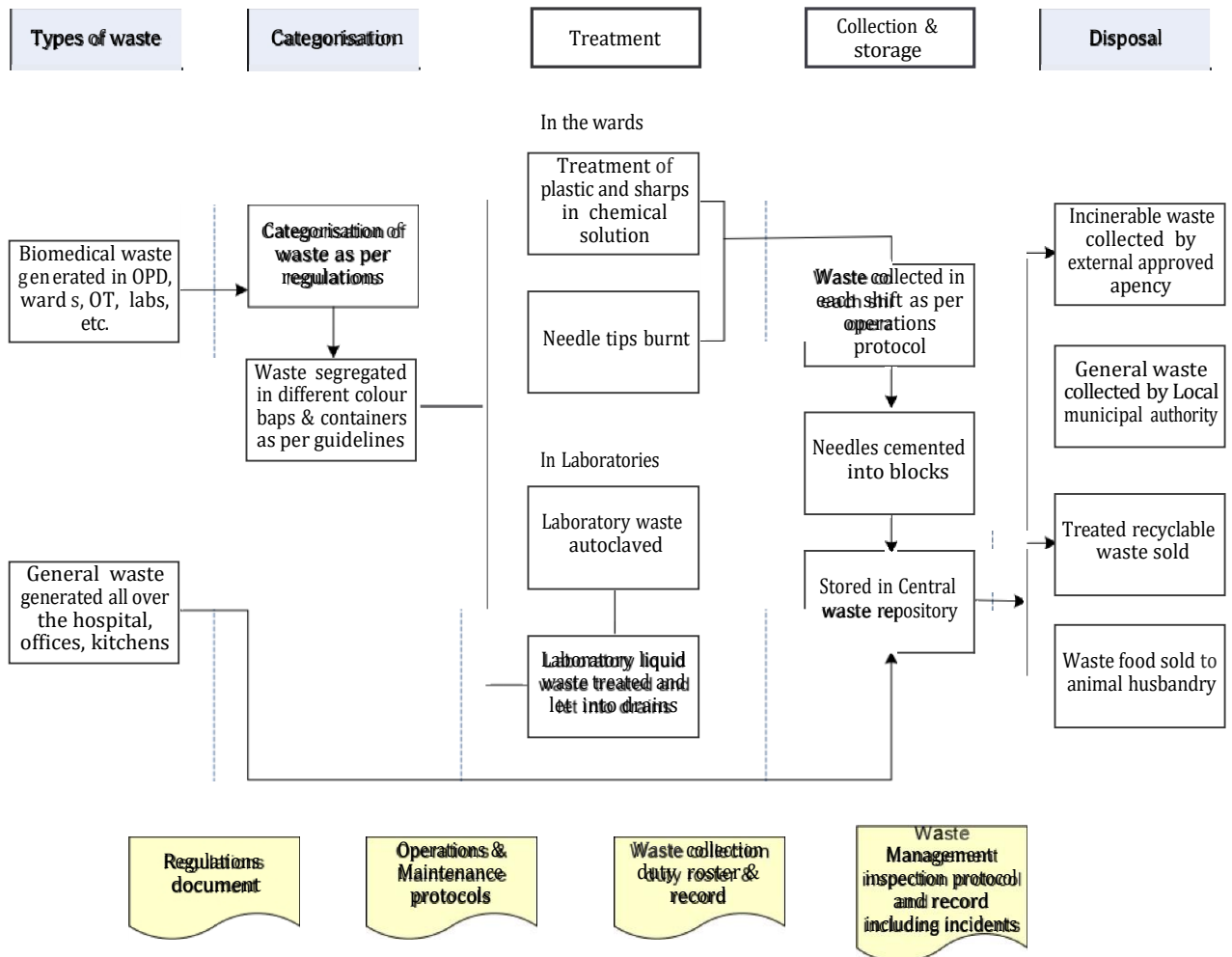
Annexure 3 -Daily Waste Management Record

Date	Waste Cat-1		Waste Cat-1		Waste Cat-1		Waste Cat-1		Waste Cat-1		Sup Signa.
	Amount	Signature	Amount	Signature	Amount	Signature	Amount	Signature	Amount	Signature	
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

Annexure 4 -Defaults/ Incidents of Waste Management Record

Sl. #	Default / Incident	Area and Mode of Observation	Root Cause Analysis				Action Taken for prevention	Responsibility & Target date	Status / Remarks
			what exactly happen	Who were involved	contributing factors	Earlier report			

Annexure 5-Flow Chart



Annexure 6- Label for Transport Of Bio-Medical Waste Containers/Bags

Schedule-IV

LABEL FOR TRANSPORT OF BIO-MEDICAL WASTE CONTAINERS/BAGS

Waste Category No.	Day Month
Waste Class	Year
Waste Description	Date of generation
Sender's Name & Address	Receiver's Name & Address
Phone No.	Phone No.
Telex No.	Telex No.
Fax No.	Fax No.
Contact Person	Contact Person
In case of emergency please contact:	
Name & Address	
Phone No.	

Note: Label shall be non-washable and prominently visible.

Annexure 7- Label for Bio-Medical Waste Containers/Bags

Schedule-III

LABEL FOR BIO-MEDICAL WASTE CONTAINERS/BAGS

BIOHAZARD



BIOHAZARD

CYTOTOXIC



CYTOTOXIC

HANDLE WITH CARE

Note: Label shall be non-washable and prominently visible.



Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH

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