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PURPOSE:


To provide a guidelines in the classification and proper segregation, collection, hauling and disposal of hospital waste.

LEVEL:

Applies to all Staff involved in the segregation, collection, hauling and disposal of medical waste at Dr. Pablo O. Torre Memorial Hospital (DPOTMH)

POLICY:

- 1 DPOTMH shall abide by the waste management guidelines set by the Department of Health, DENR, DENR-EMB and World Health Organization.
- 2 Proper segregation of wastes shall be the responsibility of the person or area generating the waste.
- 3 The color of the waste receptacles shall determine the type of garbage to be discarded. Upon removal of the plastic liner within the waste receptacle, the plastic liner shall be properly labeled by a color-coded band/color coded tie.
- 4 The color of the waste containers shall be as follows:
 - 4.1 **BLACK, BLUE, GREEN** – General Waste
 - 4.2 **YELLOW** - Infectious Waste
 - 4.3 **RED puncture proof container** – Sharps
 - 4.4 **WHITE 1** – Vials
 - 4.5 **WHITE 2** – IV Plastic Bottles
 - 4.6 **WHITE 3** – IV Glass Bottles
 - 4.7 **WHITE 4** – Barrels and Syringe
- 5 Other hazardous wastes like chemotherapy wastes shall not be discarded in the above stated receptacles. Housekeeping is responsible for pick-up and disposal of other hazardous and infectious wastes.
- 6 All General Waste shall be properly segregated at the Materials Recovery Facility (MRF) of the hospital.
- 7 Sharps should all be collected together, regardless of whether or not they are contaminated. Containers should be puncture proof (usually made of metal or

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high-density plastic) and fitted with covers. It should be rigid and impermeable to contain not only the sharps but also any residual liquids from syringes. To discourage abuse, containers should be tamper proof (difficult to open or break) and needles and syringes shall be rendered unusable.


- 8 Bags and containers for infectious waste should be marked with the international infectious substance symbol.
- 9 Staff shall never attempt to correct errors of segregation by removing items from a bag or container after disposal or by placing one bag inside another bag of another color. If general and hazardous waste are accidentally mixed, the Housekeeping Aide use a tong to correct the waste segregation. Both waste bin will be disinfected with an approved disinfectant.

CATEGORIES OF HEALTH CARE WASTE

- 1 **General Waste** – Comparable to domestic waste, this type of waste does not pose special handling problem or hazard to human health or to the environment. It comes mostly from the administrative and housekeeping functions of healthcare establishments and may also include waste generated during maintenance of healthcare premises.

1.1 **Biodegradable Waste** are generally materials from an organic origin that when disposed will decompose by natural process. This means it will break down and decay into simpler forms.

- 1.1.1 Paper (e.g. paper bags, newspaper, official receipts)
- 1.1.2 Cardboard boxes
- 1.1.3 Food scraps
- 1.1.4 Barbecue sticks
- 1.1.5 Paper plates
- 1.1.6 Fruits and vegetables
- 1.1.7 Biodegradable plastic

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1.2 **Non-biodegradable Wastes** are materials that once discarded cannot be broken down into its origins. These are waste materials that can still be recycled into suitable beneficial use.

- 1.2.1 Plastic water bottles
- 1.2.2 Glass food/beverage bottles
- 1.2.3 Aluminum soda cans
- 1.2.4 Styrofoam and styropors packaging
- 1.2.5 Plastic bags/wrappers
- 1.2.6 Plastic cups/ plastic utensils
- 1.2.7 Tetrapacks
- 1.2.8 Plastic Sachet (e.g. coffee, creamer, tea, sugar, shampoo, conditioner, soap, dishwashing liquid, candy wrappers)

2 **Infectious Waste** - Infectious waste is suspected to contain pathogens (bacteria, viruses, parasites, or fungi) in sufficient concentration or quantity to cause disease in susceptible hosts.

- 2.1 Waste from laboratory and Molecular Laboratory (cultures and stocks of infectious agents from laboratory work; pathological, including some anatomical highly infectious waste, small pieces of tissue, infected animal carcasses, blood and other body fluids)
- 2.2 Waste from patients (e.g. dressings, bandages, sticking plaster, gloves, disposable medical items, underpads, diapers, sanitary napkins, face masks, etc).
- 2.3 Waste from surgery (e.g. tissues, and materials or equipment that has been in contact with blood or other body fluids).
- 2.4 Waste from infected patients in isolation wards (e.g. excreta, dressings from infected or surgical wounds, clothes heavily soiled with human blood or other body fluids).




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- 2.5 Waste that has been in contact with infected patients undergoing hemodialysis (e.g. dialysis equipment such as tubing and filters, disposable towels, gowns, aprons, gloves, and laboratory coats).
- 2.6 Any other instruments or materials that have been in contact with infected persons or patients' blood and body fluids.
- 3 **Pathologic Waste** - Pathologic waste consists of tissues, organs, body parts, human fetuses and animal carcasses, blood, and body fluids. Within this category, recognizable human or animal body parts are also called anatomical waste. This category is considered as a subcategory of infectious waste, even though it may also include healthy body parts.
- 4 **Sharps** - Sharps are items that could cause cuts or puncture wounds, including needles, hypodermic needles, scalpel and other blades, knives, infusion sets, saws, broken glass and nails. Whether or not they are infected, such items are usually considered as highly hazardous health-care waste.
- 5 **Glass Waste** - Vials, slides and bottles shall be treated as a separate category for the purposes of waste management.
- 6 **Pharmaceutical Waste** - Pharmaceutical waste includes empty pharma/medicine containers, expired, unused, split, and contaminated pharmaceutical products, drugs, vaccines, and sera that are no longer required and need to be disposed of appropriately. The category also includes discarded items used in the handling of pharmaceuticals, such as bottles or boxes with residues, gloves, masks, connecting tubing, and drug vials.
- 7 **Genotoxic Waste** - Genotoxic waste is highly hazardous and may have mutagenic, teratogenic, or carcinogenic properties. It raises serious safety problems, both inside hospitals and after disposal, and should be given special attention. Genotoxic waste may include certain cytostatic drugs (see below), vomit, urine, or feces from patients treated with cytostatic drugs, chemicals, and radioactive material. Cytotoxic (or

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antineoplastic) drugs, the principal substances in this category, have the ability to kill or stop the growth of certain living cells and are used in chemotherapy of cancer.

They play an important role in the therapy of various neoplastic conditions but are also pending wider application as immunosuppressive agents in organ transplantation and in treating various diseases with an immunological basis. Cytotoxic drugs are most often used in specialized departments such as oncology and radiotherapy units, whose main role is cancer treatment; however, their use in other hospital departments is increasing and they may also be used outside the hospital setting.


Harmful cytostatic drugs can be categorized as follows:

- a. **alkylating agents:** cause alkylation of DNA nucleotides, which leads to cross-linking and miscoding of the genetic stock;
- b. **antimetabolites:** inhibit the biosynthesis of nucleic acids in the cell;
- c. **mitotic inhibitors:** prevent cell replication.

Cytotoxic wastes are generated from several sources and can include the following:

1. contaminated materials from drug preparation and administration, such as syringes, needles, gauges, vials, packaging;
 - b. outdated drugs, excess (leftover) solutions, drugs returned from the wards;
 - c. urine, feces, and vomit from patients, which may contain potential hazardous amounts of the administered cytostatic drugs or of their metabolites and which should be considered genotoxic for at least 48 hours and sometimes up to 1 week after drug administration

- 8 **Chemical Waste** - Chemical waste consists of discarded solid, liquid, and gaseous chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping, and disinfecting procedures. Chemical waste from health care may be hazardous or nonhazardous; in the context of protecting health, it is considered to be hazardous if it has at least one of the following properties:

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- 8.1 toxic;
- 8.2 corrosive (e.g. acids of pH < 2 and bases of pH > 12);
- 8.3 flammable;
- 8.4 reactive (explosive, water-reactive, shock-sensitive);
- 8.5 genotoxic (e.g. cytostatic drugs).

The types of hazardous chemicals used most commonly in maintenance of health-care centers and hospitals and the most likely to be found in waste are discussed in the following paragraphs.

Formaldehyde


Formaldehyde is a significant source of chemical waste in hospitals. It is used to clean and disinfect equipment (e.g. haemodialysis or surgical equipment), to preserve specimens, to disinfect liquid infectious waste, and in pathology, autopsy, dialysis, embalming, and nursing units.

Photographic chemicals

Photographic fixing and developing solutions are used in X-ray departments. The fixer usually contains 5-10% hydroquinone, 1-5% potassium hydroxide, and less than 1% silver. The developer contains approximately 45% glutaraldehyde. Acetic acid is used in both stop baths and fixer solutions.

Solvents

Wastes containing solvents are generated in various departments of a hospital, including pathology and histology laboratories and engineering departments. Solvents used in hospitals include halogenated compounds, such as methylene chloride, chloroform, trichloroethylene, and refrigerants, and non-halogenated compounds such as xylene, methanol, acetone, isopropanol, toluene, ethyl acetate, and acetonitrile.

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Organic chemicals


Waste organic chemicals generated in health-care facilities include: disinfecting and cleaning solutions such as:

- phenol-based chemicals used for scrubbing floors;
- perchlorethylene used in workshops and laundries;
- oils such as vacuum-pump oils, used engine oil from vehicles (particularly if there is a vehicle service station on the hospital premises);
- insecticides, rodenticides.

Inorganic chemicals

Waste inorganic chemicals consist mainly of acids and alkalis (e.g. sulfuric, hydrochloric, nitric, and chromic acids, sodium hydroxide and ammonia solutions). They also include oxidants, such as potassium permanganate (KMnO₄) and potassium dichromate (K₂Cr₂O₇), and reducing agents, such as sodium bisulfite (NaHSO₃) and sodium sulfite (Na₂SO₃).

- 9 **Waste with Heavy Metal Content** - Wastes with a high heavy-metal content represent a subcategory of hazardous chemical waste, and are usually highly toxic. Mercury wastes are typically generated by spillage from broken clinical equipment but their volume is decreasing with the substitution of solid-state electronic sensing instruments (thermometers, blood-pressure gauges, etc.). Whenever possible, spilled drops of mercury should be recovered. Residues from dentistry have high mercury content. Cadmium waste comes mainly from discarded batteries. Certain reinforced wood panels containing lead are still used in radiation proofing of X-ray and diagnostic departments. A number of drugs contain arsenic, but these are treated here as pharmaceutical waste.
- 10 **Pressurized Containers** - Many types of gas are used in health care, and are often stored in pressurized cylinders, cartridges, and aerosol cans. Many of these, once empty or of no further use (although they may still contain residues), are reusable, but certain types -notably aerosol cans- must be disposed of. Whether

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inert or potentially harmful, gases in pressurized containers should always be handled with care; containers may explode if incinerated or accidentally punctured.

11 **Radioactive Waste** - Radioactive waste includes solid, liquid, and gaseous materials contaminated with radionuclides. It is produced as a result of procedures such as in-vitro analysis of body tissue and fluid, in-vivo organ imaging and tumor localization, and various investigative and therapeutic practices.



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