



INTRODUCTION TO STA. ANA HOSPITAL'S HEALTHCARE WASTE MANAGEMENT

I. INTRODUCTION

Considering the services offered by Sta. Ana Hospital (SAH), it generates 0.45 kg per bed per day of infectious waste. Out of total wastes generated by the hospital about 45% are considered as hazardous waste. These wastes are needed to be treated prior to its final disposal wherein, the hospital will incur huge amount of money, if not minimized. These wastes pose harmful effect not only on the waste handlers but also to our environment if not properly handled. Thus, considering the large volume of waste generated by the hospital, there is a need to have a Healthcare Waste Management Plan to be efficiently and effectively implemented within the hospital premises.

SAH has been registered as "Generator" from the Environmental Management Bureau (EMB)- Department of Environment and Natural Resources (DENR) as Hazardous Waste Generator with DENR I.D. No. GR-13-39-0377. This is pursuant to Section 2-1 of the DENR Administration Order 36, Series of 2004, Implementing Rules and Regulations of the "Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990" (RA 6969). The hospital has also obtained from the same Department its Environmental Compliance Commitment (ECC) - ECC- NCR 1010-0360 issued under Presidential Decree 1586.

II. HISTORY OF STA. ANA HOSPITAL

Manila Mayor Alfredo S. Lim once dreamed in the early 90's, that "for every district of Manila, there should be a hospital". It was in April 28, 2010, that this dream was realized and fulfilled. Laying the foundation of Sta. Ana Hospital (SAH) started in July 2009, which commenced its construction under the administration of the Mayor.

In December 29, 2009, the City Council spearheaded by Vice Mayor Francisco "Isko" Domagoso, have passed **Budget Ordinance 8206** entitled "*An Ordinance establishing a District hospital in the sixth district of Manila, defining its function and providing for its organizational structure, and for other purposes*", paved the way for the creation of SAH. The initial budget

appropriated for its establishment, operation and maintenance is pegged at PHP 460 million. Mr. Lucio Tan, through the Tan Yan Kee Foundation donated the land, where the hospital was constructed. After which an additional supplementary budget No. 1 Ordinance 8233 dated April 19, 2010 has been approved.

In April 28, 2010, SAH was inaugurated and attended by various dignitaries in Manila who graced the momentous occasion. This was made possible through the concerted efforts of the City Council of Manila under the dynamic leadership of Honorable Alfredo S. Lim with the generous support from the Tan Yan Kee Foundation headed by its Chairman, Mr. Lucio Tan. The hospital building premises was literally transformed into a fully operational tertiary hospital wholly committed to serve the broadest segment of our people with a fully complemented departmental services under the Medical, Nursing and Administrative Division.

SAH operates as a Level III with 200-bed capacity tertiary hospital. The Hospital is a ten storey building which currently only up to six storeys had been used and occupied

SAH is one of the six local district hospitals in Manila. The other tertiary hospitals in the City are the following: Ospital ng Maynila, Gat Andres Bonifacio Memorial Medical Center and Justice Jose Abad Santos Mother and Child Hospital. The other two (2) secondary hospitals are: Ospital ng Tondo and Ospital ng Sampaloc.

SAH was opened offering free general medical services to the public. The pioneer OIC Hospital Director, Dr. Mario C. Lato ably assisted by the hospital administrator, Dr. Joyce S. Chow, Chief of Clinics, Dr. Jose Narciso Melchor C. Sescon and Chief Nurse, Ms. Aileen de Castro, who had the enormous task of speeding up various deliveries of logistical needs, equipment and to fill in vacancies of hospital personnel from the administrative, nursing and the medical division.

From the first three months (April to June 2010), transitional medical services has been implemented, to include continuous screening and pooling of medical doctors from different specialization, dry run of the hospital's Emergency Room (ER) and Out-Patient Department (OPD), laboratory and diagnostic operations, formulation of the different Standard Operating Procedures (SOPs), organizing departmental function like delineating outpatient, emergency and ancillary services and more.

By July 2010, the Operating and Delivery Room started to operate. In August 2010, the 4th floor has been opened to admit patients. It was in September 15, 2010, after 147 days of operation, SAH was able to receive its official "License to Operate (LTO)" as a "Special Hospital".

On the same month, SAH received its membership status with the Philippine Hospital Association (PHA). SAH, likewise, has applied institutional membership status to Philippine

Society for Quality Health Care (PSQua). It was in October 2010, that the hospital provided justification why it needs to operate as a general hospital. Currently, SAH operates as a “General Hospital”.

III. HOSPITAL VISION

SAH is the premiere local government tertiary hospital in Manila that provides quality cost effective health services for the Manileños.



Figure 1 - Sta. Ana Hospital

SAH visions in 5 years' time:

- 🌍 To be the hospital of choice for patients, physicians and employees in 6th District of Manila because of its preminent patient care and teaching programs.
- 🌍 To be well recognized as a technology leader among tertiary local government hospitals in the aspect of health service delivery.
- 🌍 To be the future academic center of choice for residents and healthcare professionals.
- 🌍 To be a prominent community member known for meeting the healthcare needs of District 6 through incomparable patient care and wellness program

HOSPITAL MISSION

SAH is a local government tertiary hospital dedicated to provide the quality patient care with unrelenting attention to clinical excellence, patient safety offered by dignified, compassionate and caring health care providers.

SAH offers various medical health services conducted through education, outreach and other innovative health care services.

IV. VALUE STATEMENT

SAH is committed to uphold the following fundamental values:

People centered

Respect and value each person as a member of the hospital community. Community involvement, cooperation and enhanced community networking determine the future.

Service Excellence

Perform the standards of service excellence and dedicated to exceeding the expectations of clients.

Responsibility and Accountability

Accept personal responsibility and accountability for their work.

Quality

Consistently strive to provide the highest quality, safe patient care.

Communication

Promote open communication that fosters partnership and enhances timely, effective and appropriate responses.

Innovation

Enable and support an environment that encourages new ideas and creativity.

Integrity

Uphold honesty, fairness and self-scrutiny in everything they do as their ideals to promote patient's safety, assure of privacy and confidentiality.

Wellness and Safety

Strive to provide the maximum holistic health care services and ensure to create and sustain the safest hospital for all.

V. HOSPITAL MEDICAL SERVICES

SAH is a 200 bed capacity tertiary hospital. A *tertiary hospital* is equipped with medical and support service capabilities in the following fields:

- 🌐 Internal Medicine
- 🌐 Obstetrics and Gynecology
- 🌐 Pediatrics
- 🌐 General Surgery
- 🌐 Anesthesia
- 🌐 Psychiatry
- 🌐 Emergency Medicine
- 🌐 Out Patient Services
- 🌐 Pathology
- 🌐 Radiology
- 🌐 Rehabilitation and Physical Therapy
- 🌐 Dialysis
- 🌐 Dermatology
- 🌐 Endoscopy/Colonoscopy
- 🌐 Dental
- 🌐 ENT/Ophthalmology
- 🌐 Other Ancillary Services

VI. OBJECTIVES AND RATIONALE

The primary objective of this plan manual is to serve as a reference for SAH management and staff in the implementation of an effective and efficient healthcare waste management program. This manual is prepared so that all hospital personnel will become aware of their respective duties and responsibilities. This manual is designed to be used by all workers within the SAH who are involved in the segregation, collection, handling, storage, treatment, and disposal of Healthcare Waste (HCW). It will also serve as reference of SAH's patients, watchers, guests and clients.

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STA. ANA HOSPITAL'S HEALTHCARE WASTE MANAGEMENT COMMITTEE

I. COMPOSITION

The SAH HealthCare Waste Management Committee (HCWMC) shall be composed of the following members:

- 🌐 Medical Director of SAH as Chairperson
- 🌐 Designated Waste Management Officer as co-Chair
- 🌐 Designated Infection Control Officer
- 🌐 Designated Pollution Control Officer
- 🌐 Administrator/Head of Finance/Budget Officer



Figure 2- The Healthcare Waste Management Committee

Equally important are the specific roles and contribution of the following key personnel as provisional members of the committee, such as:

- 🌐 Division Heads of Medical, Nursing and Administrative Services
- 🌐 Heads of the different Departments, Sections or Units
- 🌐 Chief Pharmacist
- 🌐 Chief Radiologist
- 🌐 Chief of Laboratory Department
- 🌐 Chief Training Officer
- 🌐 Head of Engineering and Maintenance Department
- 🌐 Head of Property Section
- 🌐 Head of the Housekeeping Section
- 🌐 Head of the Dietary Department
- 🌐 Senior Nursing Staff

Sub-committees will be created to look into the education and training, information drive awareness and monitoring and evaluation components of the program. The Chairpersons of these sub-committees will be designated as Assistant Waste Management Officers. The members will be representatives from Administrative, Nursing and Medical Departments.

A waste management link nurse for every department will be designated to police their respective staff on the compliance to healthcare waste management policies and procedures.

II. FUNCTIONS OF THE HCWMC

The HCWMC of SAH has the following General Functions:

- 🌐 Formulate a policy formalizing the commitment of the hospital to proper management of its healthcare waste with the goal of protecting health and the environment.
- 🌐 Establish baseline data and develop the hospital's HCWM plan which should include a minimization plan, training, and written guidelines on waste management.
- 🌐 Implement the HCWM plan; and review and update the policy, plans, and guidelines on an annual basis.

- 🌍 Ensure adequate financial and human resources for implementation of the HCWM plan.
- 🌍 Conduct regular committee meetings and submit minutes of meetings.
- 🌍 Regularly monitor and evaluate the efficiency and effectiveness of the HCWMP.
- 🌍 Ensure strict compliance to existing laws, policies and guidelines

Specific duties and responsibilities shall be performed by members of the Core Team as well as identified key personnel at Sta. Ana Hospital in spearheading the implementation of the HCWM programs and activities including its monitoring and reporting.

The Director of SAH shall formally appoint / designate the members of the HCWM Committee indicating the specific duties and responsibilities.

III. DUTIES AND RESPONSIBILITIES

The sharing of duties among SAH personnel shall be imposed and the members of the committee shall have the following duties and responsibilities:

A. The Director of SAH

The Director of SAH as Chairperson of the HCWM Committee is responsible in ensuring that the HCW shall be managed in accordance with the national policies and guidelines; formally appoint/designate dedicated personnel as Waste Management Officer and Pollution Control Officer and other core members of the HCWMC indicating the specific duties and responsibilities, including their accountabilities; directing and controlling the implementation of the different programs and activities of the HCWMC and conducting regular review of the policies subject for revision and assessment.

B. Designated Waste Management Officer (WMO)

Designated Waste Management Officer (WMO) as Co- Chairperson of the HCWMC is responsible for the day to day operation and monitoring of the waste management

system in the hospital. The WMO is directly responsible to the Director of SAH. He or she should establish linkage with the Infection Control Officer (ICO), the Chief Pharmacist, the Radiation Officer and other department, unit and section heads in order to become familiar with the correct procedures for handling and disposing of infectious, pathological, pharmaceutical, chemical, radioactive and general waste. The duties and responsibilities of the WMO shall include the following:

- 🌍 Ensure the internal regular collection of waste practiced the proper waste segregation, collection and transport policies and guidelines;
- 🌍 Ensure and direct the provisions of continuous availability of waste bags, protective clothing and collection trolley, and direct supervision of utility workers;
- 🌍 Check and direct correct usage of central storage area, which should be kept locked but is accessible to authorized personnel only at all times;
- 🌍 Coordinate and monitor waste disposal operations, waste transport for both on-site and off-site;
- 🌍 Coordinate with the Senior Nursing Officer and Department Heads to ensure that nursing staff and medical assistants as well as doctors and other qualified clinical staff are aware of their responsibilities for segregation and storage of waste; and
- 🌍 Ensure that written emergency procedures are available and that personnel are aware of the action to be taken in the event of an emergency.
- 🌍 Investigate and review reported incidents concerning the handling of health care waste.
- 🌍 Ensure that all hospital personnel must undergo training on Healthcare Waste Management.
- 🌍 Ensure the proper dissemination of information on healthcare waste management among patients and watchers

C. Designated Pollution Control Officer (PCO)

The designated Pollution Control Officer (PCO) is responsible in the preparation of the requirements mandated by EMB- DENR and other regulatory agencies. He/she shall have the following duties and responsibilities:

- 🌍 Attend to the requirements of the different establishment or agency prior to the construction or installation of pollution control facilities including the application and securing of necessary pollution permits and renewal;
- 🌍 Monitor activities pertaining to the installation or construction of pollution source and control facilities with the end in view of ensuring their compliance

with air, noise and water quality standards; the PCO and the head of SAH shall be held responsible for any violations of PD 984 and its implementing rules and regulations committed by the SAH;

- 🌍 Supervise the proper operation and maintenance of pollution control facilities of the SAH;
- 🌍 Report within reasonable time to the EMB-DENR Director, the breakdown of any pollution control facility, the estimated and actual date of completion/repair and operation;
- 🌍 Promptly submit validated/certified as corrected by the Housekeeping Supervisor/Head, Engineering and Maintenance Section periodic reports as stipulated in section 7 hereof or as required by the DENR;
- 🌍 Act as liaison officer and maintain linkage with the DOH, DENR, EMB and other designated PCOs of other agencies including the local government unit PCO;
- 🌍 Keep himself abreast with the requirements of the DENR and the latest available technology on the prevention, control and abatement of pollution; and
- 🌍 Attend the meetings for Pollution Control Officers which may from time to time be called by the monitoring agency.

D. Designated Infection Control Officer (ICO)

The designated Infection Control Officer (ICO) shall have the following duties and responsibilities:

- 🌍 Maintain linkage with the WMO on a continuous basis and provide advice concerning the control of infection and the standards of the waste disposal system.
- 🌍 Identify training requirements according to staff grade and occupation;
- 🌍 Organize and supervise staff training courses on healthcare waste management;
- 🌍 Liaise with the department heads and Senior Nursing Officer regarding training of staff; and
- 🌍 Handle the overall responsibility for chemical disinfection, sound management of storage for chemicals, and chemical waste minimization.

E. Finance and Budget Officer

The Finance and Budget Officer is responsible in ensuring the provision of continuous logistics and inclusion in the annual development plan for maintaining and sustaining the programs and activities being implemented by the HCWM Committee;

F. Division Heads of the Medical, Nursing and Administrative Services

The Division Heads of the Medical, Nursing and Administrative Services shall ensure strict compliance of their respective staff with the policies and guidelines being implemented by the HCWMC; disseminate policies and guidelines down the line, to all the support staff in SAH; conduct regular orientation and reorientation among their staff; and maintain linkage with the designated WMO;

G. Department Heads

The Department Heads are responsible within their respective areas of concern in ensuring that all members of their departments are aware of the Hospital healthcare waste management plan as to segregation and storage procedures and that strict compliance has been observed. They shall also have the following duties and responsibilities:

- 🌐 Ensure that all doctors, nurses, and clinical and non-clinical professional staff in their departments are aware of the segregation and storage procedures and that all personnel comply with the highest standards in HCWM;
- 🌐 Liaise with the WMO to monitor working practices against failures or mistakes;
- 🌐 Ensure that key staff members in their departments are given training in waste segregation and disposal procedures; and
- 🌐 Encourage medical and nursing staff to be vigilant in ensuring that hospital attendants and ancillary staff follow correct procedures at all times.

H. The Senior Nursing Officer

The Senior Nursing Officer is responsible for the training of nursing staff, medical assistants, hospital attendants, and ancillary staff in the proper procedures for segregation, storage, transport, and disposal of waste. He/she shall have the following duties and responsibilities:

- 🌐 Liaise with the WMO and the advisers (Infection Control Officer, Chief Pharmacist, and Radiation Officer) to maintain the highest standards in healthcare waste management;
- 🌐 Participate in staff introduction to, and continuous training in, the handling and disposal of waste; and
- 🌐 Liaise with the Department Heads to ensure coordination of training activities, other healthcare waste management issues specific to particular departments.

I. The Chief Pharmacist

The Chief Pharmacist is responsible for the sound management of pharmaceutical storage and for pharmaceutical waste minimization. His or her duties are to:

- 🌍 Liaise with the Department Heads, the WMO, the Senior Nursing Officer and give advice, in accordance with the national policy and guidelines, on the appropriate procedures for pharmaceutical waste disposal;
- 🌍 Coordinate continuous monitoring of procedures for the disposal of pharmaceutical waste;
- 🌍 Ensure that personnel involved in pharmaceutical waste handling and disposal receive adequate training; and
- 🌍 Ensure safe utilization of genotoxic products and the safe management of genotoxic waste.

J. The Radiation Officer

The Radiation Officer is responsible in coordinating with the Department Heads, the WMO, the Senior Nursing Officer and give advice, in accordance with the hospital policy and guidelines, on the appropriate procedures for radioactive waste disposal including its continuous monitoring; and ensuring that personnel involved in radioactive waste handling and disposal receive adequate training.

K. The Supply Officer

The Supply Officer shall liaise with the WMO to ensure a continuous supply of the items required for healthcare waste management (plastic liners, waste bins, PPEs, sharp containers of the right quality, spare parts for on-site health care waste treatment equipment, etc.). These items shall be ordered in reasonable time to ensure that they are always available. However accumulation of excessive storage shall be avoided. The Supply Officer shall also be responsible in purchasing environmentally friendly products and adopting the principles of green procurement system in SAH.

L. The Head of the Housekeeping Section

The Head of the Housekeeping Section including the unit heads of linen and janitorial services shall maintain cleanliness and orderliness of the hospital premises for sanitary,

safety and aesthetic reasons; assist in the preparation of the healthcare waste management plan; initiate the sanitary manner of implementing the pre-treatment processes, appropriate collection system/procedures and disposal of waste either by individual, group or municipal system; establish baseline data and maintain proper filing system and update program records; maintain constant good working relationship with all SAH personnel for their support and full participation in implementing the program; and enhance or provide continuous training program for housekeeping/janitorial services on healthcare waste management policy. He/she shall be responsible in the preparation of the schedule in collecting wastes by the Utility Workers, ensuring the availability of the PPEs for the utility workers in charge of handling waste, ensuring the regular cleaning and disinfecting of waste storage area, waste bins and trolleys and ensuring the availability of housekeeping supplies and materials.

M. The Head of the Engineering and Maintenance Section

The Head of the Engineering and Maintenance Section shall assist in the proper collection, pre-treatment and disposal of hospital's healthcare waste; carry out directly the activities related to the operation and maintenance of pre-treatment, collection and disposal system as soon as possible with importance to the drainage system and plumbing facilities of the hospital; and attend immediately to problems arising from the repair/installation of waste equipment. He/she will ensure the continuous operation and maintenance of hospital's treatment facility. He/she shall be responsible for installing and maintaining waste storage facilities and handling equipment that comply with the specifications of the national guidelines. He/she is also accountable for the adequate operation and maintenance of any on-site waste treatment equipment and is responsible for the staff involved in waste treatment. He/she will ensure that the staff shall receive training on the principles of waste disposal and are aware of their responsibilities under the HCWM plan, and that the staff in charge of operating the on-site waste treatment facilities is trained in their operation and maintenance.

N. The Driver In-charge of Transporting Healthcare Waste

The driver in charge in transporting healthcare waste shall assist in the availability and maintenance of the vehicle. He is responsible in transporting health care waste from SAH to disposal sites, preparing and planning the collection system routes and frequency of collection, inspecting and scheduling maintenance work on vehicles.



STA. ANA HOSPITAL'S HEALTHCARE WASTE MANAGEMENT

I. HEALTHCARE WASTE MANAGEMENT

Healthcare Waste Generation is the point at which healthcare waste is produced. Waste generated as a result of health care activities includes a broad range of materials, from used needles and syringes to soiled dressings, body parts, diagnostic samples, blood, chemicals, pharmaceuticals, medical devices and radioactive materials.

Poor management of healthcare waste potentially exposes healthcare workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, and risks polluting the environment. It is essential that all medical waste materials are segregated at the point of generation, appropriately treated and disposed of safely.

II. CLASSIFICATION OF HEALTHCARE WASTE

The following are the classifications of HCW:

1. **General Waste** - comparable to domestic wastes, this type of waste does not pose special handling program or hazard to human health or the environment. It comes mostly from the administrative or housekeeping functions of hospital and may also include waste generated during maintenance of hospital premises. General wastes should be dealt by the municipal waste disposal mechanism. This is further classified into a.) the recyclable waste, b.) the biodegradable waste and c.) the non-biodegradable waste. Examples of general waste produced by SAH are as follows papers, tetra packs, bottles, food waste, packaging of hospital supplies, cardboards, junk food packaging, disposable cups, dried leaves, pressurized containers, etc.



Figure 3- Non-Biodegradable General Waste

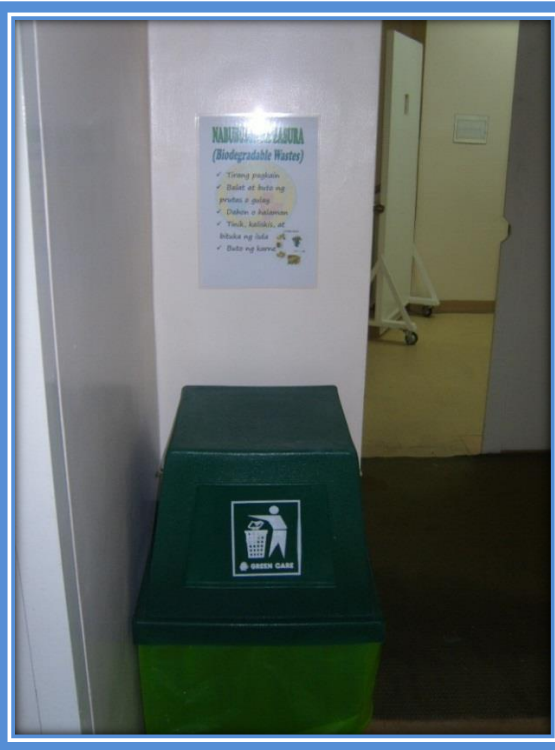


Figure 4- Biodegradable General Waste

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

These include:

- 🗑️ Cultures and stocks of infectious agents from the laboratory work;
- 🗑️ Wastes from surgery and autopsies on patients with infectious diseases (e.g. tissues, materials or equipment that have been in contact with blood or body fluids);
- 🗑️ Wastes from infected patients on isolation wards(e.g. excreta, dressings from infected or surgical wound, clothes heavily soiled with human blood or other body fluids);
- 🗑️ Wastes 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);
- 🗑️ Any other materials that have been in contact with infected persons.



Figure 5 - Infectious Waste

3. *Pathological and Anatomical Waste* - consists of tissues, organs, placenta, body parts, human fetus, blood and body fluids. Within this category, recognizable human body parts are also called anatomical wastes. This category should be considered as a sub-category of infectious waste, even though it may also include healthy body parts.



Figure 6- Pathological Waste

4. Sharps- includes needles, syringes, disposable scalpels and blades, broken glass, infusion sets, knives, nails and any other items that can cause a cut or punctured wound. Whether or not they are infected, such items are usually considered as highly hazardous healthcare waste.



Figure 7-Sharps Waste



Figure 8 - Improvised Sharp Waste Container

5. Pharmaceuticals- includes expired, unused, spilt and contaminated pharmaceutical products, drugs, and vaccines that are no longer required and needed to be disposed of appropriately. This category also includes discarded items used in handling pharmaceuticals such as bottles or boxes with residues, gloves, masks, connecting tubing and drug vials. It also includes antineoplastic, cytotoxic, and genotoxic waste. Drugs usually used in oncology or radiotherapy units have a high hazardous mutagenic or cytotoxic effect same with medical supplies and containers of cytotoxic drugs or chemicals.



Figure 9-Pharmaceutical Waste

6. 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 healthcare may be hazardous or non-hazardous:

- a. Discarded Chemicals (solid, liquid or gaseous) generated during disinfecting and sterilizing procedures such as laboratory reagents, film developer, disinfectants and soaking solutions and solvents.
- b. Chemical Waste can be further classified as :
 - i. Corrosive (e.g. acids of pH <2 and bases of pH > 12)
 - ii. Flammable
 - iii. Reactive (explosive, water-reactive, shock-sensitive)
 - iv. Genotoxic (e.g. cytostatic drugs)

- c. Chemical wastes also include wastes with high content of heavy metals and their derivatives. Mercury wastes are typically generated by spillage from broken clinical equipment (thermometers, BP 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 “reinforce wood panels” containing lead still is being used in radiation proofing for x-ray and diagnostic departments. A number of drugs contain arsenic but these are treated here as pharmaceutical waste.

Non-hazardous chemical waste consists of chemical with none of the above properties, such as sugars, amino acids, and certain organic and inorganic salts



Figure 10- Chemical Waste

7. ***Radioactive Waste***- includes disused sealed radiation sources, liquid and gaseous materials contaminated with radioactivity, excreta of patients who underwent radionuclide diagnostic and therapeutic applications, paper cups, straws, needles, and syringes, test tubes and tap water washings of paraphernalia. It is produced as a result of procedures such as in vitro analysis of body tissues and fluids, in vivo organ imaging, tumor localization and treatment in various clinical studies involving the use of radioisotopes. Radioactive healthcare wastes generally contain radionuclides with short half-life, which lose their activity in a shorter time. However, certain radionuclide’s e.g. C-14 contaminated waste have much longer half-life, more than a thousand years which need to be specially manage in centralized treatment facility for radioactive waste. The same is required for the management of this disused sealed radiation sources used for cancer treatment.

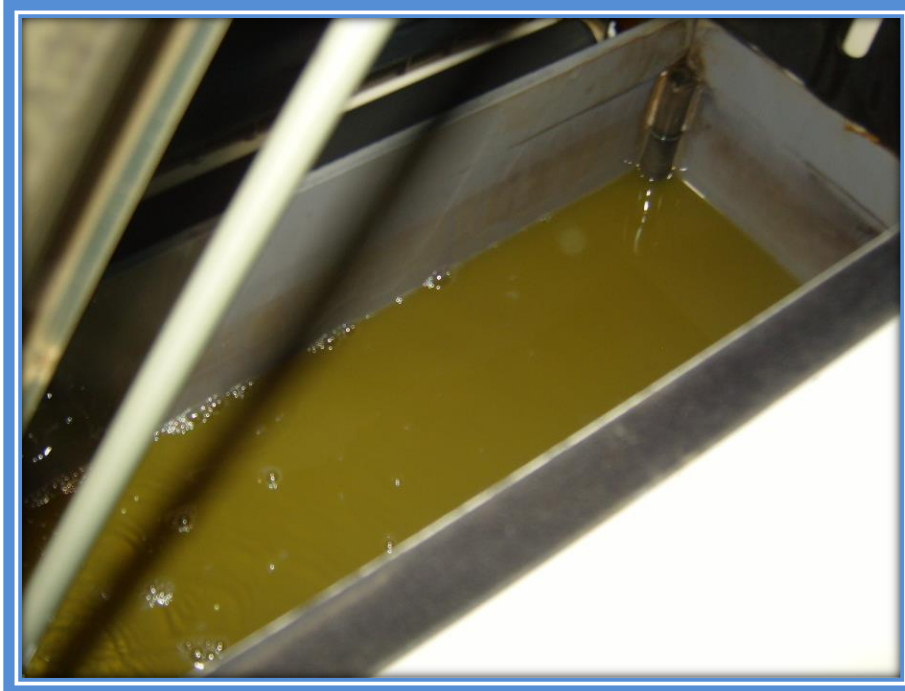


Figure 11- Radioactive Waste

III. SOURCES OF HEALTHCARE WASTES IN THE HOSPITAL

SAH's units and departments that generate waste with the following characteristics:

1. *Operating Room, Delivery Room, and Surgical Ward* - general wastes (including a great deal of packaging), pathological and anatomical wastes including tissues, organs, products of conception and body parts. Other potentially infectious wastes include gauze soaked with blood, contaminated gloves, tubing, some body fluid container and sharps.
2. *Medical Wards (OB-GYNE, Pediatrics, NICU, ICU, PICU, SICU, ERD, OPD)* - mostly general waste; a limited amount of infectious wastes such as blood-soaked dressings, bandages, sticking plaster, contaminated gloves, contaminated packaging and disposable medical items; used or unused hypodermic needles and intravenous sets and certain body fluids.
3. *Laboratories* - general wastes (including packaging containers), pathological including some anatomical wastes, tissue samples, microbiological cultures and stocks, blood and body fluids, contaminated gloves, tubing and containers, sharps, possibly some

radioactive materials, and a large number of chemicals. Many tissue samples will come packed in formalin or will be put in a container with formalin. They are no longer infectious, but the tissue sample and the formalin must be separated creating chemical and pathological wastes for proper disposal.

4. *Pharmacy*- mainly general wastes, product packaging, small quantity of pharmaceutical and chemical waste (if stocks are properly managed to prevent large quantities from expiring), possible cytotoxic drugs if chemotherapy are being prepared in the pharmacy.
5. *Other Healthcare Units* - mostly general wastes with small percentage of an infectious waste.
6. *Support Units* - general wastes only

WASTE MINIMIZATION TECHNIQUES

Waste minimization represents those activities that prevent or minimize the amount of waste generated. This will allow for the most efficient use of resources, minimize the impact on health and the environment and lower disposal costs.

The following activities can help minimize the amount of hazardous waste that is generated by the hospital:

1. Good Housekeeping

In order to reduce the volume of the hospital's chemical wastes significantly by purchasing chemicals in appropriate volumes, maintaining an inventory of purchased chemicals, and ensuring that materials are clearly identified, a laboratory can centralize the purchasing of chemicals through assigning one person only so that purchases are not duplicated.

- 🌍 Purchase the size container that can be completely used up in two to four months, whenever possible. Purchasing large containers because of the apparent quantity discount has been shown to increase total cost because the cost of disposing residuals in containers more than off-sets the saving of purchasing in bulk quantities.

- 🌍 Maintain an accurate chemical inventory in the laboratory to reduce or eliminate the number of redundant chemical containers purchased. A successful laboratory inventory will catalog chemicals at least once a year, identify the storage locations of chemicals, and eliminate chemicals from the inventory when they are consumed. Remember to date chemical containers when they are received so that older ones will be used first. Any unwanted or unneeded chemicals should be tagged and labeled as hazardous waste.
- 🌍 Make sure that each chemical container is labeled with the full chemical name (no chemical formulas or abbreviations), and the potential hazard associated with the contents (corrosive, flammable, toxic, etc.). Containers are to be labeled in English. This decreases the amount of unknown waste generated in the laboratory.

In order to keep the hospital rooms clean and neat the following procedures must be followed:

- 🌍 The collection and disposal of waste must be daily and the collection time must be strictly followed but preferably in the morning and after lunch time.
- 🌍 The dusting and sweeping of the rooms must be conducted before doctors take rounds. The mopping, cleaning and placement of antiseptic must be conducted after the doctor's rounds.
- 🌍 The cobweb removal, cleaning of fan and light fittings are done when the room is empty or at time of discharge and as the need arises.
- 🌍 The dusting and application of disinfectant of furniture, windows and telephones are daily morning.
- 🌍 Use long handled scrubbers with soap solution in cleaning the discharge room. Application of disinfectant is also recommended.
- 🌍 Use UV light in disinfecting rooms after discharge of patients with highly infectious diseases, if necessary.

In order to keep the isolation rooms and intensive critical unit (ICU) clean and so as to prevent infection the following procedures must be taken:

- 🌍 The assigned utility workers in that area should be monitored also by the Nurse-in-charge but directly reporting to the housekeeping supervisor.
- 🌍 All furniture, equipment and floors of the patients' unit should be dry dust by the utility workers.
- 🌍 Wet mopping is done with soap and water daily.
- 🌍 Antiseptic cleaning is done as per the direction of the Infection Control Nurse.
- 🌍 Toilets must be cleaned and disinfected twice a day with antiseptic solution.
- 🌍 Additional cleaning must be taken when required.

In order to keep the public floors clean and to prevent infection the following procedures must be taken:

- 🌍 There must assigned utility workers in every area under the supervision of housekeeping supervisor.
- 🌍 The proper disposal of healthcare waste must be followed.
- 🌍 Sweeping and moping of floors, wall comers, windows etc. must be conducted daily with detergent.
- 🌍 Application of disinfectant must also be observed.
- 🌍 Dry dusting of wooden surfaces must be conducted.
- 🌍 Checking of toilets must be conducted daily by the Engineering and Maintenance personnel.
- 🌍 Other than routine cleaning there may be additional cleaning which may be needed as and when needed.
- 🌍 Fans and light fittings are to be cleaned once a week or when necessary.
- 🌍 Wash basins are to be cleaned with cleaning powder every morning and as and when required.
- 🌍 Ceiling is dusted every week to remove cobwebs and dust accumulation.
- 🌍 Cleaning of glasses, glass doors and dusting of aluminum railings and frames must be conducted daily.

In order to keep the ward and public toilets clean and so as to prevent infection the following procedures must be followed:

- 🌍 The assigned utility worker cleans the toilet two times a day with antiseptic solution. Also cleaning of toilet will be done as and when required
- 🌍 Cleaning is first done with soap solution and water. Areas to be cleaned are closet, floor, walls and washbasin with prescribed sanitizer.
- 🌍 Ceiling is dusted to remove cobwebs and dust accumulation when not in use.
- 🌍 Toilet brush is used for cleaning the toilet.

The following duties and responsibilities of the utility workers must be observed as far as good housekeeping is concerned. These include the checking and maintaining inventory such as:

- 🌍 Linen inventory which includes sending and receiving of linen daily.
- 🌍 Daily inventory of cleaning equipment like mop with stick, water pusher, waste pusher, brush etc.
- 🌍 Checking the availability of cleaning solution.
- 🌍 Checking the availability of color coded bags and maintaining the stock.
- 🌍 Cleaning the operating room whenever necessary.
- 🌍 Checking and reporting of any damage or repair of cleaning items.

In general, when the entire environment is kept clean and in order, healthcare waste will be minimized.

2. Product or Process Substitution

Consider the following practices:

- 🌱 Avoid the use of reagents containing the following metals: barium, arsenic, cadmium, chromium, lead, mercury, selenium, and silver. Solutions of these metals meet EPA's criteria for the toxicity characteristic (and will be considered hazardous waste) if metal concentrations exceed the low regulatory levels.
- 🌱 Avoid the use of reagents containing the following solvents: benzene, carbon tetrachloride, chlorobenzene, chloroform, cresol, dichlorobenzene, methyl ethyl ketone, nitrobenzene, pyridine, tetrachloroethylene, trichloroethylene, trichlorophenol, and vinyl chloride. Solutions of these solvents meet EPA's criteria for the toxicity characteristic (and will be considered hazardous waste) if solvent concentrations exceed the low regulatory levels.
- 🌱 Avoid the use of a listed chemical wherever possible. For example, ethanol can be used in place of methanol (listed waste) for some blotting techniques. If the concentration of non-listed alcohols in an aqueous solution is less than 24%, it is not considered an ignitable hazardous waste by the EPA. Contact OEHS for a list of potential substitutes for different processes. Eliminate the use of chromic acid cleaning solution, if possible, for cleaning glassware. Where possible, use less hazardous or non-hazardous agents such asalconox, no-chromix, terg-a-zime or other non-toxic detergents.
- 🌱 Instead of using Dental Amalgam, use composite and other dental mercury free products.
- 🌱 Use of low mercury fluorescent lamps instead of mercury fluorescent lamps.
- 🌱 Phase-out all non-essential uses of mercury in the laboratory chemicals.
- 🌱 Use recycled materials that can be used again
- 🌱 Use bio friendly inks to print stamps, labels, decals and packaging tape.

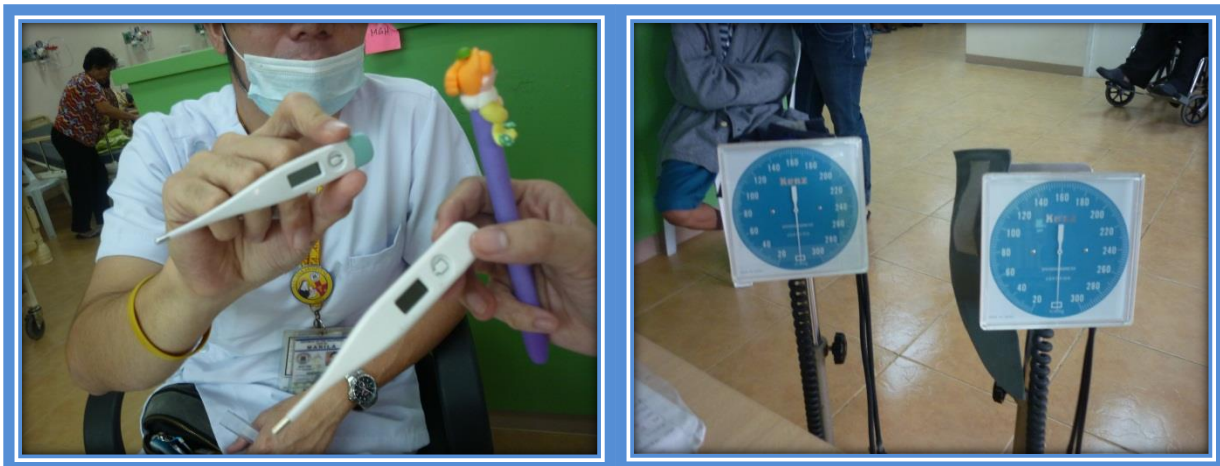


Figure 12- Mercury-free Devices and Products

3. Proper Segregation

Waste segregation is the practice of classifying waste and placing it into the appropriate wastes' container immediately after the waste is generated. There should be color-coded waste bins and plastic liners for different type of waste. The black waste bins and plastic liners should be used for non-biodegradable general and recyclable waste while the green waste bin and plastic liner are used for biodegradable general waste. The red leak-proof container should be used for sharps waste and generally the infectious and other hazardous waste such as chemical, pharmaceutical and pathological waste are placed inside yellow plastic liners and waste bins. The radioactive wastes are place inside the orange lead-proof container.

IV. IMPORTANCE OF WASTE SEGREGATION

Hospital personnel including patients and watchers should accurately segregate waste to protect everyone from injury and infection by preventing hazardous waste entering inappropriate waste streams and divert hazardous healthcare waste from mixed healthcare waste streams. Proper segregation is necessary to ensure that materials which are reusable or recyclable are not discarded. Proper segregation and containment of all wastes are required in order to comply with the hospital policy on healthcare waste. Mixing of wastes is not permitted. If general wastes are mistakenly placed inside waste bin intended for infectious waste it will be considered as infectious waste.

V. COLOR-CODING SCHEME AND LABELING OF WASTE BINS AND PLASTIC LINERS

Table 1. Color-Coding of Waste Bins and Plastic Liners at SAH According to type of Waste

<i>COLOR OF WASTE BIN/PLASTIC LINER</i>	<i>TYPE OF WASTE</i>
BLACK or COLORLESS	Non-biodegradable and recyclable general waste
GREEN	Biodegradable general waste (kitchen, dietary, etc.)
YELLOW	Infectious and pathological waste
YELLOW with BLACK BAND	Pharmaceutical and chemical waste including those heavy metals
ORANGE*	Radioactive waste *
	Sharps **

*Radiation proof repositories, leak proof and lead - lined container

**Sharps container must be punctured-proof



Figure 13- Color Coded Waste Bins and Plastic Liners

Types of Waste Bins and Plastic Liners at SAH:

1. Color-coded waste bins (green, black and yellow)
2. Punctured-proof sharp containers
3. Color-coded plastic liners (big and small)

By following these segregation guidelines, the hospital can reduce a significant amount of waste:

- 🌍 Hazardous healthcare waste and general healthcare waste shall always be segregated. When hazardous waste is mixed with general waste, it creates a mixture that is considered hazardous waste.
- 🌍 Collect halogenated solvents and non-halogenated solvents in separate containers. This allows for some solvents generated in the laboratory to be recycled and used for other laboratory applications.
- 🌍 Keep biodegradable wastes separate from non - biodegradable waste.
- 🌍 Collect highly toxic chemical waste (i.e. cyanides, osmium tetroxide) and all other chemical waste in separate containers and return it to supplier.

VI. COLLECTION OF HCW

Proper collection and transportation is important in healthcare waste management. Its implementation requires the direct involvement of the healthcare facilities maintenance services, housekeeping services, and cooperation of all the healthcare personnel.

Healthcare waste collection practices should be designated to achieve an efficient movement of waste from points of generation to storage or treatment facility while minimizing the risk of personnel.

A. On-Site Collection

Healthcare waste should not be allowed to accumulate at the point of production. Nursing and other hospital staff should ensure that waste plastic liners and containers are tightly closed or sealed when they are about $\frac{3}{4}$ full. Light gauge plastic liners can be closed by tying the neck, but heavier gauge plastic liners probably require plastic sealing tag of the self-locking type. Plastic liners should not be closed by stapling. Sealed sharp containers should not be placed in a labeled, yellow infectious healthcare waste bag before removal from the hospital ward and ensure that they should be leak proof.

Utility workers under the Housekeeping Section of the hospital should observe the following:

1. Waste should be collected daily (or as frequently as required) and transported to the central storage area. Schedule of waste collection for the 1st shift is 1pm, 2nd shift is 8pm, 3rd shift is 4am and for OPD is 1pm daily.
2. Plastic liners should be removed after sticker has been placed indicating their point of generation (hospital ward or department), contents and volume of waste.
3. The plastic liners or containers should be replaced immediately with new ones of the same type.
4. A supply of new collection plastic liners or containers should be readily available at all location where healthcare waste is generated.
5. Collection practice for active solid radioactive waste shall consist of distributing orange color-coded suitable containers with the radiation symbol. The collection of active solid radioactive waste from designated storage area can only be made when the activity (delay-to-decay) decays to a safe level and upon the strict supervision and guidance of the radiological health and safety officer.
6. The Utility Workers that collect healthcare waste from different departments shall follow approved route as posted in strategic areas.
7. Collection starts from the upper floor and from septic to aseptic area.
8. The Utility Workers that will collect healthcare waste must wear proper PPEs.

9. The Utility Workers will fill-up the sticker; he or she will record the source of waste, the contents and volume of waste.
10. The Utility Workers should strictly follow the collection schedule.
11. The Utility Workers should clean and disinfect the waste bins, trolleys and waste storage area daily.



Figure 14-On-site Collection



Figure 15- Typical Route Plan

On-Site Transport of Healthcare Waste

Transportation of waste within the hospital shall utilize standard wheeled trolleys, containers or carts that are dedicated solely for the purpose. These trolleys should meet the following specification:

1. Easy to load and unload
2. No sharp edges that could damage waste bags or containers during loading and unloading
3. Easy to clean

The trolleys should be cleaned and disinfected daily with an appropriate disinfectant. All wastes plastic liner seals should be in-place and intact at the end of collection.

Workers collecting the waste should be equipped with appropriate Personal Protective Equipment (PPE) including heavy-duty gloves, aprons, thick-soled boots and face masks.

The time of collection is once every shift or three times a day.

B. Off-Site Transport of Healthcare Waste

The Housekeeping Supervisor is responsible for the safe packaging and adequate labeling of waste to be transported off-site and for authorization of its destination. Packaging and labeling should see to it that it presents no danger to the public during transport. Also, she is ultimately responsible for ensuring that their waste treated accordingly and the treated waste was disposed properly.

The requirements for a transport vehicle to be used during the transport of healthcare waste are as follows:

1. Transport vehicle should have an enclosed leak proof body and capable of being locked to secure the waste during disposal. The vehicle must meet the regulations or international standards.
2. The body of the vehicle should be of suitable size commensurate with the design of the vehicle.
3. Has totally enclosed car body with the driver seat separated from the loader to prevent coming into contact with waste in the event of collision/accident.
4. The vehicle should be cleaned at the end of each working day and in the event of any spillage.
5. The vehicle should be marked with the name and address of the hospital.
6. A special kit for dealing with liquid spills should be carried in a separate compartment in the vehicle.
7. The transport vehicle should contain a copy of the manifest form.

VII. STORAGE AREA OF HCW

The permanent Healthcare Waste Storage Area of SAH will be located at the back of the hospital near the electrical power room. This is also near the Wastewater Treatment Plant as well as in Generator set wherein this should be connected. At the back of the proposed storage area is a vacant lot. At present, the hospital has temporary storage area located at the left side fronting the main building. The requirements for a central storage area are as follows:

1. All healthcare wastes will be collected and stored in this area until treatment is done.
2. The waste storage area shall be marked with warning sign, **“CAUTION : HEALTHCARE WASTE STORAGE AREA - UNAUTHORIZED PERSONS KEEP OUT”**
3. The storage area is located away from the patient rooms, laboratories, hospital function/operation rooms or any public access areas.
4. There is dedicated storage area for general, recyclable, infectious and mercury containing products.
5. The storage room or building size shall be appropriate with the quantity of waste produced, the frequency of collection and should be in a separate area.
5. The storage area should have an impermeable, hard-standing floor with good drainage; it should be easy to clean and disinfect.
6. There should be a water supply for cleaning purposes.
7. The storage area should allow easy access for staff in charge of handling the waste. Easy access for waste collection vehicle, wheeled trolleys, containers, or carts is essential.
8. The Housekeeping Supervisor is in- charge to lock the storage area to prevent access by unauthorized persons, animals, insects, birds and the likes.
9. There should be protection from the sun, rain, strong winds, floods, etc and a fire extinguisher should be provided for fire protection.
10. There should be a good lighting and at least adequate ventilation.
11. The storage area should not be situated in the proximity of fresh food stores or food preparation areas.
12. A supply of cleaning equipment, PPE and plastic liners or containers should be located conveniently close to the storage area.
13. Floors, walls and ceilings of the storage area must be kept clean in accordance to the established procedures, which at a minimum should include daily cleaning of floors.
14. Hazardous waste should not be stored longer than 2 days to minimize microbial growth, putrefaction, and odor. If the waste must be stored longer than 2 days, refrigeration at 4 deg. °C or lower is recommended.
15. The Central Storage Area should be made of a concrete structure with an area of approximately 2 sq. mtr. each with 3 divisions such as:

- | | | |
|----------------|---|---------------------------------|
| a. Black/Clear | : | Non-Biodegradable General Waste |
| b. Green | : | Biodegradable General Waste |

c. Yellow : Infectious Waste



Figure 16- SAH's Temporary Waste Storage Area

Storage Procedure for Mercury Waste

In order to prevent the release of mercury vapour, always use two containers, primary and secondary to store mercury waste like busted mercury lamps which are present in the hospital. Waste of this type primarily includes broken lamps with mercury and also mercury -contaminated rags, paper towels, shoes and other objects that has been exposed or used for clean-up. Since intact mercury lamps have the potential to be broken at any time during storage in the hospital. These are also considered as hazardous wastes that should be treated in the same manner as freed up or spilled elemental mercury (double packing).

The primary and secondary containers should have the following characteristics: a.) easy to open and re-sealable, b.) leak-proof and air-tight, c.) puncture-proof and unbreakable, d.) made of material that does not react with or amalgamate with mercury, such as plastic, wood or cardboard, e.) made of material that resists corrosion, f.) easy to lift or portable and g.) plastic wrappers and containers of clear and transparent material. A vapor suppression agent like sulphur powder and transparent material or water should be added to the primary container to protect the health of

staff in charge of collection and storage. Perform the sealing off a mercury wastes into containers one after another or double packaging over a plastic basin or spill control tray in order to catch any spill. Label the primary container to indicate the type of mercury waste it contains. The waste containers should be labeled “Hazardous Mercury Waste” along with a description of the contents, the initial date mercury was placed in the storage container and the identification of the waste generator or name of the health facility. If the container is not transparent enough such that the label on the primary container is not readable, a label should also be placed on the secondary container. Mercury waste containers that are meant to be stored for some time within the health facility should be securely placed on top.

Storage of Mercury Lamps

Unbroken fluorescent lamps are stored with the aim to prevent breakage within the short period between storage and transfer to accredited treatment, storage and disposal (TSD) facilities. Broken fluorescent lamps, on the other hand, are stored as mercury-containing wastes, following guidelines no. 2.1 (2.1.1 thru 2.1.5) of DOH Department Memo No. 2011-0145 which is also mentioned above.

Unbroken lamps should be stored in a primary container that prevents breakage, preferably the original box in which the lamps were shipped. If the original box is not available, a box with a well-sealed vapour-resistant liner, such as plastic foil liner, is recommended. Otherwise, a long box or other box that fits the shape of the lamp can be used.

If the fluorescent lamps are stored in their original shipping cases or in a box with vapour-resistant liner or in an approved fluorescent lamp drum or container, there is no need for a secondary container. If the fluorescent lamps need secondary containers, taped plastic sheets that prevent the release of mercury vapour can be used, the labeling follows. Stack up fluorescent lamps in a stable position. Stack them into adequately sized shelves that protect the entire length of the lamps or stand them up into tall plastic drums.

Management of Mercury Storage Area

All personnel involved in collection, storage, on site transport and supervision of mercury waste should have training in mercury waste management and spill cleanup.

General rules for safe maintenance of the storage area are:

- a.) There should be no smoking or eating in and around the storage area.
- b.) Regular pest and vermin control program should be instituted for the storage area to ensure that packed mercury wastes are not tampered with, and that no contaminated pets bring out mercury out of the storage area.
- c.) Inspect the storage space at least once a month to check for leaks, corroded or broken containers, improper methods of storage, ventilation, condition of PPEs and wash area, spill kit contents and records.

- d.) The Chair of the Healthcare Waste Management Committee or the head of the hospital should keep updated about information on the availability of Environmental Management Bureau (EMB) accredited treatment, storage and disposal facilities for mercury waste that can serve the hospital and coordinate the transfer and coordinate the transfer of accumulated mercury waste in the soonest possible time.
- e.) Inventory records should be kept of the types of mercury waste, descriptions, quantities in storage and initial dates of storage. The date of inspection, findings and name of inspector should also be recorded. Information on this inventory record will be used to fill up the hazardous waste registration form of the DENR-EMB prior to transport of the mercury waste outside of the health facility.

VIII. TREATMENT OF HCW

The hazardous waste of SAH like infectious, sharps and some pathological waste generally will be treated using autoclave. The hospital will have a Memorandum of Agreement (MOA) with the Manila Cemetery for the safe burial of most of its pathological waste. They will also have MOA with its suppliers to have their hazardous chemicals and other pharmaceutical waste to be returned for proper treatment and disposal. The radioactive waste is treated using delay to decay and being collected by the Philippine Nuclear Research Institute (PNRI) in a lead proof container.

The requirements for a treatment facility are as follows:

1. The treatment area shall be located in a place that is accessible to the waste workers but not accessible to the general public and where the waste be transported safely by wheeled trolleys, containers, or carts.
2. A regular inspection and periodic maintenance schedule (at least quarterly) of the autoclave and the storage area shall be conducted by an authorized and trained biomed maintenance personnel.
3. A treatment schedule and activities shall be followed before any treatment be made. A record of treatment activities should be maintained and updated.
4. The treatment area shall be provided with PPEs, first aid kit, fire extinguishers for safety protections of the personnel and the facility.
5. The treatment area shall have a good lighting and adequate ventilation.
6. The treatment area size shall be appropriate with the size of the autoclave and shredder.
7. The treatment area shall have an impermeable, hard-standing floor with good drainage; it should be easy to clean and disinfect.

SAH has an existing Wastewater Treatment Plant (WWTP) for its wastewater. The WWTP has a 300 cu. mtr. capacity. There is a Service Provider that operates and maintains the plant. There will be quarterly testing of its effluent to ensure that it passes the DENR effluent standards DAO 34/35.



Figure 17- Wastewater Treatment Plant Facility

IX. DISPOSAL OF HCW

After appropriate treatment has been conducted in specific hazardous healthcare waste, it will be transported to a sanitary landfill for its final disposal. The hospital may also practice composting or sold its bio-degradable wastes to piggery, depending on its volume, for its final disposal. Most of the hospital pathological waste may be brought to Manila Cemetery for safe burial for its final disposal. SAH recycled its general waste before it will be collected and disposed-off in a landfill by the Municipal Transport Service. The hazardous chemical and pharmaceutical wastes that the hospital is generating will be returned to the supplier for its final disposal. The radioactive waste, if any, will be collected by the PNRI in a lead proof container. The mercury containing products like fluorescent lamps once busted will temporarily place in a dedicated storage area in the hospital before it will be contracted out for final storage by the service provider depending on its volume.

4

STA. ANA HOSPITAL HEALTHCARE'S WASTE MANAGEMENT TRAINING

I. EDUCATION, TRAINING, INFORMATION, AND COMMUNICATION ACTIVITIES

Everyone within SAH plays a vital role in the management of HCW. For this reason, the training program should cast a wide network. Every worker should be made aware of the policy, the significant health and environmental impacts of their work activities, their roles and responsibilities, the procedures that apply to their work and the importance of conformance with the requirements. The worker should understand the potential consequences of NOT following the requirements.

A training module on HCWM should be part of the Orientation/re-orientation Program for newly-hired and existing workers to ensure consistency in compliance by all Sta. Ana employees.

The IEC materials, issuances and advisories should be utilized to raise awareness and ensure effective implementation of the program.

II. COMMUNICATION AND TRAINING

All SAH personnel has the responsibility and a “duty of care” for the environment and public health, particularly in the institutionalization of awareness among HCW and the general public.

The need to promote appropriate handling and disposal of HCW is important in public health. Every member of hospital and the community has the right to be informed about the potential health hazards associated to HCW. Inadequate handling of HCW may have serious public health consequences and impact on of environment health protection.

Public awareness through formal or informal education plays an important role in HCWM. Development of information, education and communication (IEC) programs and materials shall be given due course.

III. OBJECTIVES

The primary objectives are to:

- 🌐 Transmit the basic skills and knowledge in establishing a healthy, secure, and safe environment for HCW and the general public.
- 🌐 Inform the public about the risks linked to HCW, focusing on people either living or working in close proximity to, or visiting HCF, families of patients being treated at home, and scavengers on waste dumps.
- 🌐 Foster responsibility among hospital patients and visitors to HCF regarding hygiene and HCWM.
- 🌐 Prevent exposure to HCW and related health hazards; this exposure may be voluntary, in the case of scavengers, or accidental, as consequence of unsafe disposal methods.
- 🌐 Increase awareness of the impact of HCW on environment and ecology.

IV. METHODS OF COMMUNICATION AND TRAINING USED

To effectively communicate the importance of knowing the hazards of HCW and its management to the hospital employees, patients, watchers and clients, the following methods can be considered:

- 🌐 Development, reproduction and dissemination of IEC Materials. IEC materials to be used may vary. There are two types to choose from, namely:
 1. Graphics and audio-visuals which may be in the form of brochures, posters, display board, video tapes, slides, CD/DVDs, flyers, flip charts, leaflets, etc.; or
 2. Use of Tri media such as announcement or commercial ads featured in Sta. Ana website.



Figure 18- Posters on Proper Waste Segregation

- 🌐 Conduct series of orientation/re-orientation seminars, trainings and workshop among employees of the hospital, community and health teachings among hospital patients, watchers and other clients using the IEC materials and didactic exercises.
- 🌐 Issuances of written hospital policies to disseminate the information and awareness among employees. There should be corresponding sanctions to be implemented for non-compliance of the issued policies to ensure strict compliance.

V. TRAINING OF HEALTHCARE PERSONNEL

Training is essentially the transferring of knowledge, skills, and capacity building of targeted participants. In the hospital, it is mandatory to implement education and training programs to make the hospital personnel aware of the hazards involved in HCW and their specific role.

To achieve the goal, designing the training activities is necessary such that all SAH personnel shall receive appropriate training. Such training shall be tailored to the different needs at

various levels or functions in the hospital. The overall aim of the training is to develop awareness on the health, safety and environmental issues relating to HCW, and how these can affect employees in their daily work. It should also highlight the roles and responsibilities of the health care personnel in the overall management program.

Separate training activities should be designed for each of the following targeted groups of personnel:

- 🌍 Sta. Ana Hospital's top management, middle managers and administrative staff responsible for implementing regulations on HCWM
- 🌍 Medical doctors
- 🌍 Nurses and assistant nurses
- 🌍 Cleaners, utility workers, auxiliary staff, and waste handlers

The training needed from those producing the waste as well as the waste handlers, is equally important. Medical doctors may be educated through senior staff workshops and general hospital staff through formal seminars. The training of top management and trainers, however, could take place outside the hospitals, at public health schools or university departments.

Basic education program for health care staff should include:

- 🌍 Information on and justification for all aspects of the HCW policy;
- 🌍 Information on the role and responsibilities of each hospital staff member in implementing the policy;
- 🌍 Technical instructions, relevant for the target group, on the application of waste management practices.

All SAH personnel must receive initial and annual training. A trained personnel must be available during training sessions. The trainer shall have experience in teaching and training, and be familiar with the hazards and practices of HCWM. Ideally, they should also have experience in waste handling.



Figure 19-Picture of the training activities

VI. TRAINING PACKAGE FOR EACH GROUP

The development of a training package should be suitable for the various types of hospital personnel.

A. For Hospital Doctors and Nurses

The training course should provide an overview of the waste management policy and underlying rationale and information on practices relevant to the trainees' responsibilities. Waste segregation is a key element for this training in waste management. All staff that produces health care waste should be responsible for its segregation, and should therefore receive training in the basic principles and practical applications of segregation. Training should make the staff aware of the potentially serious implications of the mismanagement of waste for the health of waste handlers and patients, provide them with an overview of the waste stream after collection and removal from ward, and teach them the importance of proper segregation of waste.

B. For the Utility Workers who Handle Waste

Topics covered may include the waste management policy, health hazards, on-site transportation, storage, safety practices, and emergency response. Among staff who routinely handles health care waste, awareness of the need for safety may decrease with time, which will increase the risk of injury. Periodic refresher course is therefore recommended

C. For Autoclave Operators

The training course should include:

- 🌐 Information on the risks associated with the handling of HCW;
- 🌐 Procedures for dealing with spillage and other accidents;
- 🌐 Correct use of protective clothing.

D. For Staff Who Transport the Waste

In carrying out the responsibility of waste transportation, the drivers and waste handlers should be aware of the nature and risk of the transported waste. SAH transport staff should be able to carry out all procedures for:

- 🌐 Handling, loading and unloading of waste bags and containers;
- 🌐 Dealing with spillage or accidents;
- 🌐 The use of PPE; and,
- 🌐 Documentation and recording of HCW, e.g. by means of consignment note system to allow waste to be traced from the point of collection to the final place of disposal.

E. For Treatment Plant Operators

SAH make arrangement to provide training to prospective treatment plant operators specifically on the following areas:

- 🌐 General operation of the treatment facility;
- 🌐 Health, safety, and environmental implications of treatment operations;
- 🌐 Technical procedures for plant operation;
- 🌐 Emergency response, in case of equipment failures and alarms for example;
- 🌐 Maintenance of the plant and record keeping;
- 🌐 Surveillance of the quality of emissions and discharges, according to the specifications



Figure 20- Training/Workshop



Figure 21- Training/Orientation



STA. ANA HOSPITAL'S HEALTH AND SAFETY

PRACTICES

I. STAFF PROTECTION AND SAFETY

All SAH personnel who are directly involved in the handling of HCW must be provided with adequate protection from the hazards associated with it. Protection against personal injury is very important for all workers at risk. The individual responsible for the management of HCW should ensure that all these risks are identified and that suitable protection is provided. The installation of the required protection measures will proceed after the conduct of a comprehensive risk assessment of the activities in HCWM. The design of the measure will focus on the prevention of workers exposure or at least an exposure within safe limits. Suitable training should be provided to the hospital staff on this aspect. In regular cleaning of waste bins and storage areas as well as in other stages of waste handling, SAH worker should observe proper infection control measures. The occupational health and safety measures that will be considered are the following:

- 🌐 Education, training and awareness of HCF workers
- 🌐 Provision of appropriate Personal Protective Equipment (PPE)
- 🌐 Establishment of an effective occupational health and safety program that includes pre-employment immunization, pre and post exposure prophylactic treatment, hazard identification and risk assessment and continuous medical surveillance
- 🌐 Information, Education and Communication (IEC) activities

II. PRE-EMPLOYMENT IMMUNIZATION

All SAH workers are at risk for exposure to and possible transmission of vaccine-preventable diseases because of their contact with infective materials from patients through HCW. Acquiring immunity against vaccine-preventable diseases is therefore an essential part of prevention and infection control programs for personnel.

Hospital workers should be given immunization to prevent or minimize the effects of infection by many pathogens such as virus causing hepatitis B and tetanus infection. Expenses for this activity shall be incorporated in the Annual Operational Budget. These services will be administered at the Employees Clinic annually.

III. POST-PROPHYLACTIC IMMUNIZATION

Persons exposed to hazardous risks such as needle pricks, body fluid contact and other work-related injuries should be given post-prophylactic immunization as prescribed by the attending physician.

IV. SAFETY GUIDELINES

SAH workers may come into contact with hazardous substances through accidental spills, whether these substances are infectious, chemical, toxic, or biological in nature. The hospital should establish an emergency management and response plan to immediately mitigate occurrence of such incidents. The primary purpose of the emergency management plan is to define and layout the emergency preparedness to respond effectively to any eventualities that pose immediate danger to health and safety of workers, patients and visitors.

VII. EMERGENCY MANAGEMENT PLAN

Contingency planning and emergency preparedness is a program of long term development activities whose goals are to strengthen the overall capacity and capability of SAH to manage efficiently all types of emergencies and to bring about an orderly transition from relief through recovery and back to sustain development.

There are three (3) phases for the safe management of HCW in emergencies. These are:

Phase One: Mitigation and Preparedness

Phase Two: Emergency Response

Phase Three: Recovery

A. Mitigation and Preparedness

As defined, mitigation refers to the systematic reduction in the extent of exposure to a risk and/or the likelihood of its occurrence. On the other hand, preparedness refers to the SAH's readiness to respond to any emergency. This includes the specific strategies, plans and actions to respond to the occurrence of any hazard, such as the exposure to hazardous substance, whether infectious, chemical and biological spillage and other toxic substances

To determine the readiness of SAH, the following activities should be done:

Rapid Initial Assessment - This is the collection of subjective and objective information to measure damage and identify those basic needs of the affected population that require immediate response within 24 hours. An assessment team should conduct this initial phase which may include relief or awareness activities. To work effectively, the team should have a clear cut disposition and priority whether to gather information or perform relief actions.

Based on the assessment report, hazards due to waste should be prioritized according to the following elements:

1. Severity
2. Frequency
3. Extent
4. Duration
5. Manageability

Availability of first aid equipment for use by injured employees- This is understandable, as the regulation covers every means of employment, and different jobs have different types of injuries and different first-aid requirements.

In general, there are different types of first aid kit required, depending on the workplace. In SAH, the basic first aid kit having the following contents shall be made available at the Emergency Room at all times:

- 🧑‍⚕️ Adhesive bandages (band-aids, sticking plasters)
- 🧑‍⚕️ Dressing (sterile, applied directly to wound)
- 🧑‍⚕️ Sterile eye pads
- 🧑‍⚕️ Sterile gauze pads
- 🧑‍⚕️ Bandages (for securing dressings, not necessarily sterile)
- 🧑‍⚕️ Butterfly closure strips
- 🧑‍⚕️ Saline
- 🧑‍⚕️ Soap

- 🌐 Antiseptic
- 🌐 Hypoallergenic adhesive tape



Figure 22- SAH's First Aid Kit

Practices to mitigate / prevent waste spill include the following:

- 🌐 Provision of safety reminders and signage on strategic areas;
- 🌐 Education and training on proper sealing of waste liners;
- 🌐 Minimal handling of waste;
- 🌐 Collection of waste should be done when the bin is three-fourth full;
- 🌐 Provision of plastic liner in accordance to standard specification (Please see chapter 5 of the DOH HCWM Manual);
- 🌐 Provision of leak-proof container;
- 🌐 Proper use of standard waste trolleys during transport;
- 🌐 Opening of sealed bags should be avoided;
- 🌐 Availability of Clean-up Kit; and
- 🌐 Strict compliance to all policies and procedures

The clean-up kit for spill should contain the following items:

- 🗑️ One (1) pair of latex gloves
- 🗑️ One (1) N95 mask (for blood, body fluids and chemotherapeutics/cytotoxics spills)
- 🗑️ Respirator with specific filter for the type of chemicals
- 🗑️ One (1) Zip lock bag - small
- 🗑️ One (1) Zip lock bag - big
- 🗑️ Absorbable cloth
- 🗑️ Appropriate disinfectant solution for spills due to blood, body fluids and chemotherapeutics /cytotoxics
- 🗑️ Neutralizing solution specific for acids or alkali
- 🗑️ Eye goggles (for major spills)
- 🗑️ Labelling materials
- 🗑️ Small pail with putty clay at the bottom (for chemical spill)
- 🗑️ Miscellaneous items which the hospital may require to meet specific need

B. Emergency Response

Emergency Response refers to the activity carried out by a group of well-trained SAH personnel after activation of the hospital response team. This includes implementation of the emergency management plan such as the activation of the incident command system relevant to exposure to hazardous substance, whether infectious, chemical and biological spillage and other toxic substance.

The area where the hazardous waste was accidentally contaminated must be cleaned up thoroughly by the team following standards of emergency response (e.g. isolation, wearing PPE, incident command system, etc.). A designated triage with medical and nursing staff should handle individuals who are contaminated before transport to the Emergency Room for further treatment.

VII. PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE) is the specialized clothing worn by a SAH workers designed to protect against infectious materials or from exposure to infectious agents (OSHA), thus PPE's serve to prevent injury or illness from a specific hazard. In the hospital, when a hazard is identified efforts should be made to eliminate it, so that hospital workers will not be harmed or at least to lessen the risk. In order to protect the workers particularly the utility workers, the use of PPE is necessary. The hospital management thru the Healthcare Waste Management Committee must ensure that the following PPEs are always available to all utility workers and those involved in waste handling:

- 🗑️ Facemasks - depending on the nature of exposure

- 🌐 Overalls (coveralls)
- 🌐 Leg protectors and or industrial shoes/boots
- 🌐 Disposable gloves or heavy duty gloves
- 🌐 Hard hats with or without visor – depending on the nature of exposure
- 🌐 Eye protectors/Safety Goggles - depending on the nature of exposure
- 🌐 Industrial aprons
- 🌐 Respirators (HEPA) filters - depending on the nature of exposure



Figure 23- Utility Worker in Complete PPE

VIII. SPILL CONTROL

Spillage usually requires clean up only of the contaminated area. For spillage of infectious material, however, it is important to determine the type of infectious agent. The Infection Control Officer can be asked for assistance regarding proper management and clean-up of the spill due to infectious waste. In some cases, evacuation of the area may be necessary. Procedures for dealing with spillage should specify safe handling operation and appropriate protective clothing. In case of

skin and eye contact with hazardous substance, there should be immediate decontamination. The exposed person should be removed from the area of the incident for decontamination, generally with copious amounts of water. Special attention should be paid to the eyes and any open wounds. In case of eye contact with corrosive chemicals, the eyes should be irrigated continuously with clean water for 10-30 minutes; the entire face should be washed in a basin, with the eyes being continuously opened and closed. An eye wash assembly can be installed in the unit for immediate response.

General Guidance for Spill Control

In case there is occurrence of chemical or waste spill at SAH, the following general guidelines must be followed:

1. Vacate and secure the area to prevent further exposure of other individuals.
2. Provide first aid and medical care to injured individual.
3. Inform the Waste Management Officer who should coordinate the necessary actions.
4. Determine the nature of the spill. Refer to the Material Safety Data Sheet if necessary.
5. Provide appropriate protective clothing to personnel involved in cleaning-up.
6. Limit the spread of spill.
7. Keep the area well-ventilated particularly if the spill is due to volatile organic solvents or corrosive agents.
8. Neutralize or disinfect the spilled or contaminated material if indicated.
9. Collect all spilled and contaminated material (sharps should never be picked up by hand; brushes and pans or other suitable tools should be used). Spilled material and disposable contaminated items for cleaning should be placed in the appropriate waste bags or containers and properly labeled and documented before final disposal.
10. Decontaminate or disinfect the area, wiping up with absorbent cloth. The cloth (or other absorbent material) should NOT be upturned during this process, because this will spread the contamination. Work from the least to the most contaminated part of the spill while changing the cloth at each stage to carry out the decontamination. Dry cloth should be used in the case of liquid spillage, spillage of solids while wet cloth should be used for acidic, basic or neutral chemical.
11. Decontaminate or disinfect all tools used.
12. Seek medical attention if exposure to hazardous material has occurred during the operation.
13. Normal operation may continue once the disinfected area is thoroughly clean and dry

Management of Mercury Spills

The main purpose of managing mercury spills in the hospital is to minimize the exposure of patients, health workers and the surrounding community to the hazardous health and environmental effects of mercury.

The first information to gather about mercury spills is the estimated volume of mercury spilled. Large spills are spills estimated to be more than tablespoons.

In case of a large spill, do the following:

- a.) Inform the highest ranking officer/s available in the facility at the time of the incident.
- b.) Seal off all possible points of exit of mercury vapors in the storage area and cordon off the premises.
- c.) Organize for the immediate evacuation of patients and healthcare workers. Be sure that people leaving the site had not stepped on mercury by directing them away from the site. Those who have come in contact with mercury should be directed to the nearest safe location and stay there until clean up and decontamination procedures have been instituted.
- d.) No hospital personnel, not even the members of the healthcare waste management committee should clean up the spill. Seek professional assistance.
- e.) Call the nearest fire department of the local government or the Bureau of Fire Protection to manage the large spill.

Small spills can be managed by designated members of the healthcare waste management committee, pollution control officer or housekeeping personnel who had training in mercury spill management.

Management procedures for small spills have the following components: 1.) Preparation - prior to spill event, 2.) Clean-up procedure- during mercury spill and 3.) Post-exposure monitoring. The step by step procedures for the above components are part of this plan as annex under Management of Mercury Spill.

Personal Hygiene

The number one essential component in an effective infection control program is hand hygiene which is considered as a measure of personal hygiene. SAH healthcare workers particularly the waste handlers should practice routinely the hand washing techniques in order to avoid cross infection brought about by healthcare waste. SAH should provide soap and must have continues water (warm) supply and with washing facilities like lavatories at every area where it is needed. If there is no available washing facilities at least the hospital will provide alcoholgel to its employees

IX. REPORTING ACCIDENTS AND INCIDENTS

Sta. Ana Hospital healthcare waste handlers should be encouraged to report any spillage. They should be educated on the possible effects of hazardous materials once spilled to encourage proper reporting. Accidents or incidents, including near-misses, spillage, damaged containers, inappropriate segregation, and any incident involving sharps should be reported to the Healthcare Waste Management Committee (if waste is involved) or to another designated person. The report should include the following details:

1. The nature of the accident or incident
2. The place and time of the accident or incident
3. The staff who are directly involved
4. Immediate response taken
5. Any other relevant circumstances
6. Recommendations, if any

The WMO or other responsible officer, who should take possible action to prevent recurrence, should investigate the cause of the accident or incident. The records of the investigation and recommendations must be submitted to the management for review and approval. In case, there is negligence on the part of employees or personnel as a result of accident, the hospital will not going to shoulder the expenses to be incurred by the said personnel. Any amendment in the policies and procedural guidelines must be integrated in the HCWMP of the hospital. Updates should be disseminated to all hospital workers for information and guidance. All records of spill management must be filed for future references. The reporting flow for SAH is form part of this manual as well as sample of the Occupational Incident/Accident Report Form.

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STA. ANA HOSPITAL'S HEALTHCARE WASTE MANAGEMENT MONITORING AND EVALUATION

HCWM MONITORING AND EVALUATION

An effective and efficient healthcare waste management system will be determined through proper monitoring and evaluation. SAH personnel or the Waste Management Officer shall be designated to monitor the implementation of the personnel, patients, watchers and clients' compliance to existing hospital policy on healthcare waste management. The WMO or the designated personnel will use the Self-Monitoring Tool on healthcare waste management program as well as the monitoring tool for the healthcare waste collector. The monitoring activities shall be taken once a month by the WMO and daily by the healthcare waste collector. The WMO will prepare the monthly report of monitoring activities and will submit the copy to the SAH Director copy furnish the Chief Administrative Officer. In the same manner the healthcare waste collector will also prepare the monthly report and submit the same to the Housekeeping Supervisor who in turn will submit to SAH Director copy furnish the Chief Administrative Officer. The report will contain the summary of the monitoring activities as well as the recommendations for improvement, if any. In case there are findings of violations, recommendations are included to penalize the concerned personnel or individual.



Figure 24- Evaluation Activities



Figure 25 - Monitoring Activities

I. BUDGET/PROGRAM ALLOCATION

For effective and efficient implementation of the plan, fund should be allocated. There should be annual operational plan that need to be prepared by the HCWM committee so that corresponding budget will be allocated. The committee should incorporate in the plan the needed supplies and equipment like PPEs, plastic liners, plastic bins, sharp containers, disinfectants, reproduction of IEC materials that need be budgeted. The education and training program of the hospital, as well as the manpower in charge in the collection and operation of the treatments plant its spare parts must also be considered in preparing the budget. Another item to be considered in preparing the budget allocation is the electrical and water consumption of the treatment facility.

SAH should also have a long- term financing plan or mechanism to cover the costs for sustainable healthcare waste management. Thus, SAH is planning to accept the hazardous wastes of other hospital under the City of Manila for treatment once the in-house treatment facility is operational. The hospital will plan to charge the cost of treatment with minimal cost to recover its maintenance and operational cost. Likewise, the hospital is planning to have a Memorandum of Agreement (MOA) with the suppliers for the hazardous chemicals and expired drugs and medicines, if any, will be returned to them for proper treatment and disposal, in order not to incur

additional cost on the part of the hospital. In addition, the hospital will have a MOA with the Manila Cemetery for the safe burial of the pathological wastes the hospital is generating.

II. FEEDBACK MECHANISM, UPDATING AND REVISION OF THE PLAN

Pertinent records such as annual operational plan, waste assessment reports, monitoring reports and operation and maintenance of treatment plant reports shall be kept on file by the HCWM committee. The committee should regularly update and make some adjustments and improvements of the plan based on actual experience on site.



ANNEXES

Policies and Guidelines on HCWM

