Environmental Guidelines

Storage, Transportation & Occupational Handing of Biomedical Waste

2011

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Environmental Guidelines for Storage, Transportation and Occupational Handling of Biomedical Waste

1. Objective

The objective of these Guidelines is to provide general information on the proper storage, transportation and handling of biomedical waste. It can also be used as a tool to help officers guide developers on proper handling of biomedical waste.

2. Scope and Contents

These guidelines are for any person who operates a business or facility that generates stores and transports biomedical waste. It contains information on storage, transportation and occupational handling methods as well as guidelines on various treatment methods that are applicable to Guyana.

3. Definitions

3.1. Biomedical waste: Discarded biological material from teaching, clinical and research laboratories and operations.[1]

3.2. Containment: The action of keeping something harmful under control or within limits.

3.3. Human anatomical: This is any part of the human body.

3.4. Microbiological: Any substances that contain or constitute microbes, e.g. bacteria, fungi.

3.5. Sharps: All instruments used at hospital and health care facilities that have sharp edges.

3.6. Transportation: The action of transporting something or the process of being transported.

3.7. Treatment: The use of a chemical, physical, or biological agent to make a substance harmless

[1] http://www.uottawa.ca/services/ehss/docs/BiomedicalWasteDisposalProceduresSept07.pdf

4. Overview of the Biomedical Industry

The biomedical industry comprises the pharmaceutical, hospital and general health care facilities. This industry by large produces clinical waste which according to the Environmental Protection (Hazardous Wastes Management) Regulations 2000, is (i) any part of the human body including tissues and bodily fluids, (ii) Any part of the carcass of an animal infected with a communicable disease, (iii) non- anatomical waste infected with communicable disease, (iv) any waste that is generated in the diagnostic treatment or immunization of human beings and related activities that includes research or autopsies.

In Guyana, PAHO (2004), estimated that a total of 6,561kg of health care waste is generated daily, however the total hazardous content ranged between 1,640.25 kg (3616.13 lbs) to 2,624 kg (5785.3 lbs) with region four (4) generating the largest amount of health care waste. Currently there are the draft medical waste guidelines and draft medical waste regulations which will serve as means to manage and regulate hazardous waste generation in Guyana.

5. Environmental Issues and Mitigation Measures

5.1. Issues Identified

With most of Guyana's population in Region four (4), it is expected that the majority of biomedical waste would be generated in this Region; as such it would be important to place attention on this waste. Biomedical waste can be highly infectious and can pose a great threat to human health and the safety of the environment.

5.2. Storage

All biomedical waste must be properly labelled or colour coded

Only non- sharp waste should be placed in plastic bags while sharps should be placed in sharp containers.

5.2.1. Labelling can include words such as 'Infectious substances', 'Bio hazardous waste', 'Bio-hazard'.

5.2.2. If colour codes are being used:

Waste type	Colour coding
Human anatomical	Red
Animal waste	Red
Microbiological laboratory	Red
Blood & body fluids	Red
Waste sharps	Red

Table showing colour codes from various types of biomedical waste (http://www.ccme.ca/assets/pdf/pn_1060_e.pdf)

5.2.3 Storage of Biomedical waste should not exceed 30 days. The 30 days period commences when the first item is placed into the container.

5.2.4. Indoor storage areas should be away from pedestrian traffic and be in an area that is free of insects and rodents. The storage area should be made of smooth, easily cleanable material that is impervious to liquids.

5.2.5. Outdoor storage should be in a location that allows for protection from the elements of weather and animals. A six inch international biological hazard symbol should be placed on the storage containment.

5.2.6. Waste containers (after being filled) should not be opened until treatment.

5.2.7. If a rupture occurs, containers should be placed into containment, the seal should not be removed.

5.3. Transportation

5.3.1. When transporting Hazardous Waste, all possible caution must be applied in order to prevent any possible spill of materials.

5.3.2. All packaging material should be of good quality (strength, construction type) in order to prevent any breakage during transport.

5.3.3. Containers should be leak proof and should have corrosive resistant properties.

5.3.4. Containers should also be able to withstand shock during transportation.

5.3.5. Before transporting of waste, generators must ensure that waste is packaged and sealed in such in such a manner that is suitable for safe handling.

5.3.6. Containers should be properly labelled. Labelling should have:

- Name(location);
- Date;
- Type of waste, e.g. halogens, Cyanides, etc.;
- List of content; and
- Quantity.

5.3.7. Waste must be in closed containers at all times.

5.3.8. All vehicles used for transporting Hazardous Waste must be suitably designed for various types/kinds of Hazardous materials.

5.3.9. Vehicles must have some marking, preferably “HAZARDOUS WASTE/MATERIAL” written in red denoting the purpose of the vehicle.

5.3.10. Vehicles should not be used for any other purpose than for the transport of Hazardous Waste.

5.3.11. All vehicles must be equipped with a first-aid-kit and fire extinguisher in case of emergencies.

5.3.12. Transporters of Hazardous Waste must be in possession of the manifest form during the transport of Waste.

5.3.13. Any person who transports Hazardous Waste for treatment, storage or disposal must submit a hazardous waste manifest form to the Environmental Protection Agency (EPA).

5.3.14. All drivers should have knowledge on what to do in the case of any emergency.

5.4. Treatment

5.4.1. Hazardous Waste can be treated in a number of ways. However, it is advised that only the most practicable and suitable methods be applied. Some treatment methods include:

Steam Autoclaving: This is a low heat thermal process where steam is brought into direct contact with waste in a controlled manner for a sufficient duration to disinfect the waste. It is appropriate for laboratory waste, human blood and human body fluids, sharps and non-anatomical animal and human waste.

- ***Chemical decontamination****:* this is the removal or reduction of biological agents within waste rendering them less hazardous. This method can be used for treating microbiological laboratory waste, human blood, bodily fluids and sharps. Chemical decontamination should not be used for anatomical waste.

- ***Incineration:*** this is a controlled combustion process where waste is oxidised and harmful agents are destroyed at high temperatures. This method can be used on all types of biomedical waste.

5.5. Occupational Handling

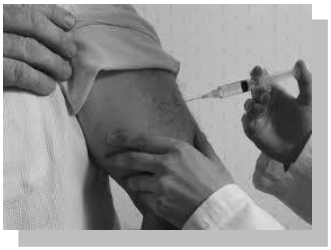
5.5.1. All persons working in facilities that generate Biomedical Waste are at great risk of exposure and contraction of infection. As such, precautions must be taken when handling waste.

5.5.2. Employers should have the safety of their employees as a top priority.

5.5.3. *Training and Personal Protection*

- All employees must be aware and familiarize themselves with the facility's procedures for the reduction, collection, storage, labelling and coding of Hazardous Waste;
- Training sessions should highlight the need for personal hygiene;
- Employees should be trained to identify methods of preventing infection, the types of hazards they are likely to be exposed to, and procedures to be used in case of an accidental spill;
- Employees must have appropriate Personal Protective Equipment (such as water repellent aprons and disposable gloves); and
- There should be written procedures on how to handle and report various injuries caused by sharps.

5.5.4 *Immunization & Sharp Precautions*



- All workers who are responsible for handling and disposal of Biomedical Waste should be immunized to prevent against the many infections that can arise from the handling of these waste.
- Immunization should be done for infections such as Hepatitis B, Rabies and Tetanus.
- Sharps must be given special attention.
- Needles must not be clipped, bent or broken before disposal.

5.5.5. *Spills and Accidents*

- All employees should be educated and trained on the management of biomedical waste and spill management.
- There should be various procedural methods for containing and isolating each type of spill.
- If a spill occurs, staff responsible for clean - up should be notified immediately
- There should be proper equipment available for clean – up.
- If a spill involving blood or bodily fluids occur, the following procedures should be followed:

  - Put on protective clothing and gloves;
  - Pour bleach (for small spills use 1:100 dilution; for large spills 1:10 dilution) over spill and allow to sit for several minutes;
  - Put kitty litter/sand over the spill and wait until absorbed;
  - Place contaminated waste in bag;
  - Put on a new pair of gloves and mop area with soap and water;
  - Dry area with paper towel and discard of material;
  - Wash hands thoroughly and report the incident.

- If any accident or spill occurs; there should be a thorough investigation as to the cause of the incident and a report be prepared.

6. EPA Authorisation Process

The first step is to apply to the **Environmental Protection Agency (EPA)** for Environmental Authorisation**.** The developer must submit to the Agency a completed Application Form and all the required information:

New Projects	Existing Projects
☛ Identification of the Permit Applicant (National ID Card, Passport). ☛ Proof of Land Ownership ☛ A 'No-Objection' Letter for the operation from the relevant Local Authority – NDC/RDC/Town Council. Note the Approved Site Plan by the NDC/RDC/Town Council would be accepted as "no-objection". ☛ 'No Objection' from the Village Council and Ministry of Amerindian Affairs if project falls within Amerindian titled lands. ☛ Land use suitability letter/Outline Planning Permission from the Central Planning & Housing Authority ☛ Map showing surrounding land uses, identification of receiving water(s) and the location of any existing or proposed intake and discharge structures and the location of any discharge. ☛ Draft Site Plan (approved by the NDC/RDC/Town Council, as applicable to project site) showing the layout of the Operation (submit a final version after all necessary adjustments have been made). ☛ Project Description (summary). ☛ Business Registration/Certificate of Incorporation (if applicable). ☛ Indication whether or not a Permit or Licence from any other Government entity is required or have been obtained. Submit Permit, Licence, or Proof of Application from relevant sector Agency.	☛ Identification of the Permit Applicant (National ID Card, Passport). ☛ Proof of Land Ownership ☛ Map showing surrounding land uses, identification of receiving water(s) and the location of any existing discharge structures and the location of any discharge. ☛ Site Plan showing the layout of the Operation. ☛ Project Description (summary). ☛ Business Registration/Certificate of Incorporation (if applicable). ☛ Indication whether or not a Permit or Licence from any other Government entity is required or have been obtained. Submit Permit, Licence, or Proof of Application from relevant sector Agency.

According to the Environmental Protection (Hazardous Wastes Management) Regulations, 2000, Part II (Power to Issue Environmental Authorisation):

3. (1) Any person who, at the time of the commencement of these Regulations, is in operation of a facility that generates, treats, stores, disposes or transports hazardous waste shall submit a duly completed notice in the form set out in Schedule III to the Agency.

(2) The Agency shall publish the notification mentioned in paragraph (1) at least twice in a daily newspaper having wide circulation in Guyana and members of the public shall have at least sixty days from the date of the last publication to make objections to the operations of the facility to the Agency.

(3) The Agency shall, in deciding to grant an environmental authorisation in accordance with regulation 18 of the *Environmental Protection (Authorisation) Regulations 2000,* take into account the submissions that have been made to it under paragraph (2).

(4) The Agency shall send a copy of the objections to the person who has given notice of activity and thereupon such person shall make application to the Agency under regulation 4.

4. (1) Any person who at the time of the commencement of these Regulations is in operation of a facility that generates, transports, treats, stores or disposes of hazardous waste, shall, subject to paragraph (3), before commencing any action related thereto, submit an application to the Agency for an environmental authorisation within three years of the commencement of these Regulations or such other time as the Agency may determine.

(2) Any person who proposes to operate a facility that generates, transports, treats, stores or disposes of hazardous waste, shall, subject to paragraph (3), before commencing any action related thereto, submit an application to the Agency for an environmental authorisation within three years of the commencement of these Regulations or such other time as the Agency may determine.

(3) The fee prescribed in regulation 8 of the *Environmental Protection (Authorisations) Regulations 2000* shall accompany the application.

(4) The Agency may at any time request a person who engages in any of the activities specified in paragraph (1) to submit a notification of activity and an application to the Agency for an environmental authorisation.

(5) An application for an environmental authorisation shall be in accordance with the provisions of regulation 17 of the *Environmental Protection (Authorisations) Regulations 2000.*

(6) In addition to the information that is required for a grant of an environmental authorisation prescribed in regulation 17 of the *Environmental Protection (Authorisations) Regulations 2000,* the applicant shall provide written evidence of financial capability.

(7) The requirement in paragraph (1) for an environmental authorisation shall not apply to –(a) Facilities that generate or store hazardous wastes in quantities less than one hundred kilograms per month; *(b)* Facilities that generate less than one kilogram of acutely hazardous wastes per month; *(c)* Facilities that accumulates up to one thousand kilograms of hazardous wastes onsite at any time.

(8) Any person who contravenes this regulation shall be guilty of an offence and shall be liable on summary conviction to a fine of not less than seventy-five thousand dollars nor more than five hundred thousand dollars and to imprisonment for six months.