

## **Practice Notes on the Disposal of Clinical Waste at Landfills**

### **Introduction**

1. The HKSAR Government is planning to provide a Centralised Incineration Facility (CIF) for proper disposal of clinical waste. During the period before the commissioning of the CIF, clinical waste will continue to be accepted at landfills for disposal as an interim arrangement.
2. Disposal of clinical waste at landfills is controlled by a permit system. Any person who wishes to deliver clinical waste to a landfill for disposal should first apply to the Environmental Protection Department (EPD) for a Clinical Waste Disposal Permit. The permittee should ensure the waste disposal operations are conducted in full compliance with the permit conditions and the requirements set out in this note.
3. This note gives guidance on the good practice on the disposal of clinical waste at Landfills in Hong Kong. Appendix I gives recommendations on the segregation, packaging, handling, storage and transportation of clinical waste for reference of waste producers and collectors.

### **Disposal at Landfill**

4. Clinical waste collectors should liaise three days in advance with the concerned landfill for booking of waste delivery.
5. Clinical waste collectors should fully co-operate with and follow any instruction given by the landfill operator in relation to the waste disposal arrangement at landfill.
6. Disposal of clinical waste at landfill must be in accordance with the following practice :-
  - a. Clinical waste must be deposited into pre-excavated trenches.
  - b. The transport vehicle should be properly parked and secured against movement before unloading the waste into the trench.
  - c. Clinical waste shall be placed into trench by hand or mechanical crane as appropriate. Placement of waste shall progress from one end of the trench to the other. Throwing, dropping of and stepping on bags or packages in the unloading are strictly forbidden.
  - d. At least 0.5m clear shall be allowed at the top of trench for immediate backfilling with soil.

- e. No person shall be allowed to enter and/or work inside the trenches unless required by the unloading operation.
  - f. Direct skin contact or accident ingestion of waste shall be avoided.
  - g. There shall be no smoking or source of ignition.
  - h. Disposal operations shall be supervised by trained personnel.
7. Extreme care must be exercised to avoid rupture or damage to waste containers. They shall not be dragged on ground or stepped on. Provisions for the handling of clinical waste as detailed in Cl. 10-14 of Appendix I shall be observed.
8. Body contact with containers of clinical waste should be avoided. The wearing of an industrial apron or leg protectors is recommended. Gloves should be worn when handling bags, sacks, boxes or drums of clinical waste. Extra care should be taken when handling sharps containers. Workers should be trained to undertake the clean-up operation in the event of spillage of clinical waste and be provided with absorbent materials, disinfection chemicals, appropriate protective clothing, masks, eye protection, gloves, etc.
9. Under no circumstances shall direct contact with clinical waste be made (such as for the extraction of incompatible wastes or cleaning up spillage).
10. Proper and simple decontamination and cleansing equipment as detailed in Cl. 18 of Appendix I and first aid kits shall be readily available.
11. All personal clothing and equipment used during and for the handling of clinical waste shall be cleaned and disinfected as soon as practicable after use.
12. When the wastes are delivered to the reception area at the landfill, care shall be taken to maintain the integrity of the waste containers during and after unloading from the transportation vehicles. Delivered wastes packaged in containers shall be buried as soon as possible within the same day of arrival.

### **Segregation**

1. The following groups of clinical waste are generated in hospitals and clinics, and require special treatment:-

*Group 1 - Contaminated Sharps*

Contaminated syringes, needles, cartridges, contaminated broken glass and other sharp instruments other than waste arising under Group 6 (cytotoxic waste).

*Group 2 - Laboratory Wastes*

Unsterilized laboratory stocks and cultures of infectious agents.

*Group 3 - Human and Animal Tissue*

All human tissues and animal carcasses from medical practices or research laboratories, whether infected or not, and items heavily contaminated with blood or blood products.

*Group 4 - Infectious Materials*

Infectious material from patients under strict isolation.

*Group 5 - Soiled Dressings*

Soiled surgical dressings, swabs and all other contaminated waste from treatment areas and isolation rooms, assessed to be of significant risk by health care personnel.

*Group 6 - Cytotoxic Wastes*

Cytotoxic drugs in bulk and all cytotoxic drug ampoules or bottles after use.

*Group 7 - Pharmaceutical and Chemical Wastes*

Pharmaceutical wastes and chemical wastes which are potentially contaminated with infectious materials or clinical wastes.

2. The above groups of waste arising shall be identified and segregated at source from general refuse and placed in an appropriate one trip container capable of holding the category of waste in a safe and hygienic manner.

### **Pre-treatment and Disposal**

3. Human tissues and body parts from operating theatres should be disposed of by incineration means as far as practicable.

4. Partly used or expired pharmaceutical and cytotoxic drugs (i.e. Groups 6 & 7 waste) are also classifiable as chemical waste and should be segregated from other clinical waste for separate disposal in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.
5. Ampoules contain minute amount of pharmaceutical and cytotoxic drugs can be disposed of as contaminated sharps. Contaminated sharps (group 1) and infectious waste (group 4) shall be disinfected as far as practicable prior to sending to landfills for disposal.

### **Packaging**

6. All clinical waste must be placed in a container or combination of containers that are leak resistant, impervious to moisture, strong enough to prevent tearing or bursting under normal handling, and can be sealed securely. Containers shall be of one trip type and under no circumstances shall they be reused or recycled.
7. Bags and sacks used for packaging of clinical waste shall be of RED colour and high density polyethylene of a minimum gauge of 100 microns or equivalent strength. Group 1 waste shall be put into puncture resistance sharps boxes or drums and sealed properly before placing into plastic bags of the above specification. Group 2 to group 5 waste shall be put into plastic bags or plastic drums prior to dispatch for disposal.
8. All containers should be effectively sealed to prevent leakage. "Goose neck tie" should in general be adopted for sealing of plastic bags and sacks. Bags or sacks should be sealed when it is no more than three-quarters full. Boxes and drums when closed must be further sealed with adhesive tape to ensure complete security of the aperture cover or lid prior to placement of the container into a bag or sack, or prior to transportation in its original form, to storage and/or disposal. Sufficient space should be left in boxes or drums to ensure that they can be sealed securely.
9. All container should be conspicuously marked with 'Biohazard' symbol and labelled as 'Clinical Waste' in both Chinese and English as far as practicable.

### **Handling**

10. All containers should be effectively sealed before movement to another place for storage or disposal. The packaging of the containers should be checked after the movement to ensure their integrity. No container should be left unattended in the course of transfer from one place to another.
11. Plastic bags should be handled by neck only. No throwing, dropping, dragging on ground of and stepping on the waste containers shall be allowed.

12. Body contact with clinical waste should be avoided. Gloves should be worn when handling bags, sacks, boxes or drums of clinical waste. Extra care should be taken when handling sharps or their containers.
13. All personnel involved in handling of clinical waste should be properly trained to handle such types of waste and fully aware of the safety requirements. In the event that a prick or cut is received in the course of waste handling, the incident must be reported immediately to the authorized or responsible person who should arrange for appropriate treatment of the injury.
14. In the event of spillage of clinical waste, the clean-up operation should be conducted by workers trained for that purpose. The workers should be provided with absorbent materials, disinfection chemicals, appropriate protective clothing, masks, eye protection, gloves, etc. Materials for repackaging spilled wastes shall comprised suitable containers such as bags, sacks, boxes and drums, as described in Cl. 6 & 7. Clean absorbent material should be used to retained and mop up liquids which may be spilled. All cleaning materials should be disposed of in the same manner as clinical waste. All contaminated protective clothing should be cleaned and disinfected after use.

### **Storage**

15. When properly sealed clinical waste containers are removed from their original position, they should be taken directly to a place of safe storage, to await collection by clinical waste collector.
16. Clinical waste must be stored in a manner and dedicated location that exhibits a warning sign to alert all personnel, protects the integrity of the packaging, maintains waste in a non-putrescent state, affords protection from water, wind and rain, and which is kept secure from unauthorized persons, animals, birds, rodents and insects and where appropriated, is accessible to collection vehicles.

### **Transportation of Clinical Waste from Storage to Disposal**

17. All clinical waste requiring extensive handling/hauling between their source of arising and point of final disposal shall, in addition to be properly packaged as stated above, be transported inside dedicated transportation vehicles. The vehicles shall be of enclosed type and should be designed to provide secure retention of the waste containers when travelling, and maintained in good sanitary condition.

18. All vehicles and vessels used for the transport of clinical waste shall be equipped with decontamination and cleansing equipment and materials to enable the operating crew to deal with spillage which may occur. These equipment should include appropriate containers, disinfectants suitable for the type of surface to be cleaned, absorbent granules, brushes, squeegees, mops and plastic shovels and buckets. First aid kits should be made available aboard. All the tools and materials should be disposed of as clinical waste after use.
19. The vehicles and vessels shall be cleaned and/or disinfected immediately following unloading, and as soon as possible in the event of rupture of waste containers causing any contamination.
20. An emergency plan for waste handling should be drawn up in case of accident or vehicle breakdown during waste transportation. The plan shall include, inter alia, the need to alert police and the arrangement for emergency backup vehicle. The drivers shall be thoroughly briefed regarding the procedures to be adopted.