For discussion
On 22 February 2010

Legislative Council Panel on Environmental Affairs

Clinical Waste Control Scheme - Subsidiary Legislation and Code of Practice under the Waste Disposal Ordinance (Cap. 354)

PURPOSE

This paper consults Members on the implementation of the Clinical Waste Control Scheme (the Control Scheme) through enactment of subsidiary legislation under the Waste Disposal (Amendment) Ordinance 2006 (the Amendment Ordinance) and the promulgation of Code of Practice (CoP) to provide the affected parties with detailed guidance on the handling and management of clinical waste.

BACKGROUND

2. In March 2002, we consulted the joint Panel on Environmental Affairs and Health Services (vide paper CB(1) 1323/01-02(02)) and Members supported the legislative proposal to amend the Waste Disposal Ordinance (WDO) to provide for the introduction of the Control Scheme. The Amendment Ordinance was subsequently enacted in April 2006. In the process, the Control Scheme and the regulatory measures had been thoroughly discussed with this Panel, the Advisory Council on the Environment (ACE), and the affected trades.

3. The Control Scheme comprises the following key elements:

(a) requiring clinical waste producers to properly manage their clinical waste by segregating those waste from other municipal solid waste and consigning the clinical waste to licensed waste collectors for disposal. Healthcare professionals [1] can be exempted from licensing when delivering not more than five kilograms of clinical waste per trip to a licensed disposal facility or an authorized collection point set up by waste collectors or individual waste

[1] A healthcare professional will be defined to mean a registered medical practitioner, dentist or veterinary surgeon; a registered or listed Chinese medicine practitioner; or a registered or enrolled nurse.

producers;

(b) establishing a statutory licensing requirement for clinical waste collectors;

(c) promulgating to the parties concerned two sets of CoP to provide guidance for clinical waste producers and waste collectors on segregation, packaging, labelling, storage, collection, transportation and disposal of clinical waste;

(d) setting up a trip ticket system to track clinical waste from source to disposal facility;

(e) designating the Chemical Waste Treatment Centre (CWTC) as the Government facility to treat clinical waste; and

(f) levying a charge on the clinical waste to be disposed of at the CWTC.

4. The details of the regulatory requirements are to be set out in the proposed Waste Disposal (Clinical Waste) (General) Regulation (the General Regulation). In order to provide the affected parties with detailed guidance on the handling and management of clinical waste, the Secretary for the Environment will issue after consultation with the ACE, under section 35 of the WDO, two sets of CoP to complement the control set out in the General Regulation.

5. On the disposal end, we will utilize the CWTC[2] to treat clinical waste. At present, clinical waste is separated from other waste for disposal in special trenches at landfills. While this is a safe and proper disposal method, high-temperature incineration is the best guarantee for all pathogens to be destroyed. We have examined other treatment methods[3] but decided against them because they are either not proven or unreliable, or there is not yet any international control parameter. We are in the process of upgrading the CWTC to receive and treat clinical waste by incineration, meeting the latest emission standard of the European Union. We aim to complete the legislative exercise by introducing the two Regulations to LegCo, as well as publishing the two sets of CoP in parallel, for implementing the Control Scheme. Disposal of clinical

[2] An Environmental Impact Assessment Study was conducted in 1998-99 and concluded that the CWTC was suitable to treat clinical waste in an environmentally acceptable manner. This Council endorsed the Study Report in May 1999.

[3] We have examined treatment methods like autoclaving, microwaving, chemical disinfection, gastrification, pyrolysis, plasma and irradiation etc.

waste at the CWTC is subject to a charge to be set out under the proposed Waste Disposal (Charges for Disposal of Clinical Waste) Regulation.

WASTE DISPOSAL (CLINICAL WASTE)(GENERAL) REGULATION

6. The main provisions of the proposed General Regulation are explained in the following paragraphs.

Duties of clinical waste producer

7. A clinical waste producer will be required to cause or arrange for the clinical waste to be properly disposed of by:

(a) consigning the clinical waste to a licensed or authorized clinical waste collector or to the collection authority;

(b) delivering the clinical waste to a collection point or licensed disposal facility by himself who is a healthcare professional, or by his employee who is also a healthcare professional on his behalf; or

(c) disposing of the clinical waste at the land or premises where the waste is generated and where a waste disposal licence is in force.

8. A clinical waste producer will also be required to keep records for a period of 12 months of the waste consigned to licensed or authorized waste collectors, or delivered to collection points or licensed disposal facilities by himself or by his employee on his behalf. He shall produce such records to the Director of Environmental Protection (the Director) for inspection when so required.

Delivery of clinical waste by healthcare professional

9. A healthcare professional delivering clinical waste to a collection point or licensed disposal facility is required to comply with the requirements set out in the General Regulation, which include the followings:

(a) the clinical waste shall not exceed five kilograms on any one occasion;

(b) the clinical waste shall not contain any infectious materials as specified in the Amendment Ordinance;

(c) the clinical waste shall be properly packaged, labelled and sealed in the containers as specified in the General Regulation;

(d) only private cars shall be used as a means of transport;

(e) the clinical waste shall be delivered directly to a collection point or licensed disposal facility within 24 hours; and

(f) adequate equipment shall be provided for cleaning up any spillage of clinical waste in the course of delivery.

Delivery of clinical waste by licensed waste collector

10. The collection of clinical waste will be regulated by licences issued by the Director under the WDO. The General Regulation will specifically provide that a licensed waste collector shall deliver the clinical waste collected within 24 hours to a licensed disposal facility so as to minimize the potential risk associated with the movement of the waste. In addition, the Director may give direction to require a licensed waste collector to deliver any clinical waste collected to a specified disposal facility within such time as specified in the direction.

Collection, removal or disposal of clinical waste

11. The Director will be empowered to serve notice(s) on an owner or occupier of land or premises requiring him to remove any clinical waste on the land or premises if the clinical waste is, or is likely to be, a danger to public health and safety, a source of pollution to the environment or a source of nuisance to the neighbouring area.

12. Under an emergency involving clinical waste, the Director may authorize, with terms and conditions, a person to collect or remove clinical waste without a waste collection licence, or to use the specified land or premises to dispose of clinical waste without a waste disposal licence.

Authorization for on-site collection point

13. The Director may on application authorize, with terms and conditions, a clinical waste producer to set up an on-site collection point on land or premises where he produces clinical waste, for receiving clinical waste generated by him in other locations or delivered by other waste producers so as to facilitate the collection of small quantities of clinical waste from small waste producers.

Exemptions

14. The Director may grant exemptions under the General Regulation to deal with justified circumstances where collection of clinical waste generated on site by licensed waste collectors is not practicable. In such circumstances, transportation of such clinical waste by trained personnel to designated points for collection by licensed collectors is more appropriate. The following circumstances warranting exemption from the General Regulation have been identified during the consultation with stakeholders:

(a) transportation of clinical waste by community nurses from where the waste is produced to their hospital;

(b) transportation of clinical waste by first-aiders from where the waste is produced to their headquarters;

(c) transportation of clinical waste by ambulances from site to hospital/headquarters; and

(d) transportation of clinical waste by the School Immunization Teams (SIT) of the Department of Health from school back to the SIT office.

Offences and Penalties

15. Offences for not complying with the Control Scheme (e.g. use of any land or premises for disposal of clinical waste without a waste disposal licence, providing clinical waste collection services without a waste collection licence, failure to arrange for proper disposal of clinical waste etc.) will be set out in the General Regulation. The penalties will be pitched at levels equivalent to similar offences in the main Ordinance with maximum fines ranging from $50,000 to $200,000 and imprisonment of 6 months.

WASTE DISPOSAL (CHARGES FOR DISPOSAL OF CLINICAL WASTE) REGULATION

16. In accordance with the “user pays” principle, we will levy a charge on the clinical waste to be received and treated at the CWTC. Having regard to the level of charges for chemical waste and our assessment of acceptance by the affected trades back then, we originally proposed to set the initial charge at

31% of the variable operating cost[4] (VOC) of the CWTC. On this basis, the charge would be around $2.38 per kilogram of clinical waste. We aimed to raise the charging level incrementally to eventually achieve full cost recovery, taking into account affordability and acceptability.

17. We have recently awarded a new ten-year contract to the CWTC operator with effect from 1 December 2009. The VOC of the CWTC operation has dropped in the new contract. For commencing the charging in 2011, we have reviewed the reasonable level of charges and propose to set the charge to recover 100% of the VOC in the new contract. The charge will be around $2.72 per kilogram. In August 2009 (in the absence of the new VOC from the new contract), we consulted the relevant stakeholders on the estimated charging level (using $3 per kilogram as the estimated rate) on the basis of 100% VOC recovery. The stakeholders were in general receptive to the estimated charge and no objection has been received so far. The charge will be prescribed in the Regulation.

DRAFT CODES OF PRACTICE FOR THE MANAGEMENT OF CLINICAL WASTE

18. To facilitate compliance with the General Regulation, the Secretary for the Environment will issue, after consultation with ACE, two sets of CoP under section 35 of the WDO to provide detailed guidance for clinical waste producers and waste collectors on the segregation, packaging, labelling, storage, collection, transportation and disposal of clinical waste. The two documents are at **Annex I and II**, which target major waste producers (e.g. hospitals) and waste collectors, and small waste producers (e.g. private clinics) respectively.

PUBLIC CONSULTATION

19. In 2001-02, we launched a public consultation on the Control Scheme and consulted the LegCo Panel on Environmental Affairs, Kwai Tsing District Council (K&TDC), medical professionals and other stakeholders. After taking into the account the views received during the public consultation, we introduced the Waste Disposal (Amendment) Bill 2005 to LegCo and it was subsequently passed by LegCo in March 2006.

20. In August 2009, we consulted the relevant stakeholders, including

[4] The variable operating cost is the payment to the contractor based on the quantity of clinical waste received and treated at the facility.

key stakeholders such as the Hospital Authority, Hong Kong Medical Association, Hong Kong Doctors Union, Practising Estate Doctors' Association, Hong Kong Dental Association, The College of Nursing, on the two sets of draft CoP and informed them of the estimated charge for disposing of clinical waste at the CWTC. The stakeholders are generally receptive to the draft CoP and the charging level.

21. We submitted a paper to the K&TDC in October 2009 and also attended its meeting in December 2009 to brief K&TDC members on the timetable for implementing the Control Scheme, the emissions monitoring arrangements by independent experts and the monthly reporting of the monitoring results to the K&TDC. K&TDC raised no objection. On 12 January 2010, we consulted the ACE and members supported the proposed implementation of the Control Scheme and promulgation of the CoP.

LEGISLATIVE TIMETABLE

22. We plan to introduce the two Regulations into the LegCo in the first half of 2010 for the negative vetting process. Subject to the progress of vetting, we aim at commencing the licensing provisions of the Amendment Ordinance by mid 2010, and the remaining provisions of the Amendment Ordinance, together with the two Regulations, by the first quarter of 2011. The two sets of CoP will be gazetted and issued in mid 2010.

ADVICE SOUGHT

23. Members are invited to comment on the proposed implementation of the Control Scheme and the promulgation of the two sets of draft CoP.

Environmental Protection Department
February 2010

Annex I

Code of Practice for the Management of Clinical Waste

- Major Clinical Waste Producers and Waste Collectors

Environmental Protection Department
The Hong Kong Special Administrative Region Government
February 2010

PREFACE

This Code of Practice is a statutory document published under Section 35 of the Waste Disposal Ordinance (Cap. 354) by the Secretary for the Environment after consultation with the Advisory Council on the Environment. The purpose of this Code is to provide guidance to major clinical waste producers and waste collectors to assist them to comply with the legal requirements of the Waste Disposal Ordinance and the Waste Disposal (Clinical Waste) (General) Regulation. Clinical waste is potentially dangerous because it may contain infectious materials and sharps. It is important to exercise special caution in the handling and management of clinical waste so as to minimize any danger to public health or risk of pollution to the environment.

Enquiries concerning this Code or the regulatory requirements may be addressed to the Environmental Protection Department at :

Address: Territorial Control Office
Environmental Protection Department
25/F, Southorn Centre,
130 Hennessy Road,
Wanchai, Hong Kong.

Telephone: 2835 1055
Facsimile: 2305 0453
E-mail: enquiry@epd.gov.hk

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1. INTRODUCTION

Clinical waste arises from a number of sources, including hospitals and clinics, medical and dental surgeries, veterinary practices, medical teaching establishments, medical research and laboratories, and nursing homes. Clinical waste is potentially dangerous because it may contain infectious materials and sharps such as needles. In addition, clinical waste containing human organs and body parts may be offensive in nature. It is therefore important to exercise special caution in the handling and management of clinical waste in order to minimize its potential danger to public health or pollution to the environment.

This Code of Practice ("Code") is designed to provide guidance to major clinical waste producers ("waste producers") and clinical waste collectors to assist them to comply with the legal requirements of the Waste Disposal Ordinance (Cap. 354) and the Waste Disposal (Clinical Waste) (General) Regulation ("the Regulation"). As major and small waste producers have different modes of operation, a separate "*Code of Practice for the Management of Clinical Waste - Small Clinical Waste Producers"* has also been published to provide guidance to small waste producers. A list of major and small waste producers is given at Annex A.

2. THE DUTY OF CARE OF CLINICAL WASTE PRODUCERS

Waste producers have a duty of care to take the following measures in managing the clinical waste generated from their premises :

- Segregate clinical waste from other waste streams and prevent clinical waste from entering the disposal chain of municipal solid waste;
- Package and label clinical waste properly to enable easy identification, including information on the source of generation;
- Provide safe and secure temporary storage area for clinical waste;
- Ensure their staff take all necessary safety measures in handling clinical waste, and provide sufficient training for them; and
- Compile a Clinical Waste Management Plan for reference by their staff.

Specifically, the Regulation requires all waste producers to arrange for their clinical waste to be properly disposed of. Waste producers are deemed to have discharged the duty if they consign the waste to a licensed clinical waste collector ("licensed collector"), or arrange the waste to be delivered to a collection point or licensed clinical waste disposal facility ("licensed disposal facility") according to the requirements specified in the Regulation. The Regulation also requires waste producers to keep records of the clinical waste consigned to licensed collectors or delivered to a collection point or licensed disposal facility, and to produce such records for inspection upon request by the Director of Environmental Protection ("the Director").

3. DEFINITION OF CLINICAL WASTE

3.1 Types of Clinical Waste

Under the Waste Disposal Ordinance, clinical waste means waste consisting of any substance, matter or thing generated in connection with -

- a dental, medical, nursing or veterinary practice;
- any other practice, or establishment (howsoever described), that provides medical care and services for the sick, injured, infirm or those who require medical treatment;
- dental, medical, nursing, veterinary, pathological or pharmaceutical research; or
- a dental, medical, veterinary or pathological laboratory practice,

and which consists wholly or partly of any of the materials specified in one or more of the groups listed below :

Group 1 - Used or Contaminated Sharps

Syringes, needles[1], cartridges, ampoules and other sharp instruments which have been used or which have become contaminated with any other group of clinical waste.

[1] Needles include acupuncture needles.

Group 2 - Laboratory Waste

Unsterilized laboratory stock cultures, or cultures, of infectious agents and potentially infectious waste with significant health risk from dental, medical, veterinary or pathological laboratories.

Note: "potentially infectious waste with significant health risk from dental, medical, veterinary or pathological laboratories" refers to those unsterilized materials or devices used to culture, transfer, inoculate or mix the laboratory stock cultures, or cultures, of infectious agents. Examples include culture dish, bottle, flask, tube, pipette, pipette tip, inoculation loop and inoculation wire.

Group 3 - Human and Animal Tissues

All human and animal tissues, organs and body parts as well as dead animals, but excluding –

(a) dead animals and animal tissues, organs and body parts arising from a veterinary practice or a Chinese medicine practice; and

(b) teeth arising from a dental practice.

Note: Group 3 clinical waste is not intended to cover small quantities of human and animal tissues which cannot be completely separated from items such as dressings.

Group 4 - Infectious Materials

Infectious materials from patients with the following pathogens - Crimean/Congo haemorrhagic fever, Ebola, Guanarito, Hendra, Junin, Kyasanur forest disease, Lassa fever, Machupo, Marburg, Nipah, Omsk, Russian spring-summer encephalitis, Sabia, Variola viruses; Herpesvirus simiae (B virus); and Severe Acute Respiratory Syndrome Coronavirus. Any materials contaminated by the above infectious materials are also classified as Group 4 waste.

Note: The Director may, by notice published in the Gazette, amend the list of pathogens under this group.

Group 5 - Dressings

Surgical dressings, swabs and all other waste dribbling with blood, caked with blood or containing free-flowing blood.

Group 6 - Other Wastes

Such other wastes as specified by the Director by notice published in the Gazette if in his opinion such wastes -

(a) are likely to be contaminated with infectious materials from patients falling within such case definition as specified in the notice; and

(b) may pose a significant health risk.

3.2 What Are Not Clinical Waste

For the avoidance of doubt, the following wastes are not classified as clinical waste and waste producers should observe relevant legal requirements applicable to the handling of these wastes :

- Radioactive waste, whether arising from medical sources or not, as defined under the Radiation (Control of Radioactive Substances) Regulations (Cap. 303A);
- Chemical waste as defined under the Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C) including cytotoxic drugs;

  Note: "Cytotoxic drug" means a drug which has the capability of selectively killing cells while they are dividing. Cytotoxic drugs in bulk or of significant residual volume in containers (e.g. unused or partially used drugs in ampoules or syringes) are regarded as chemical waste and should be disposed of according to the Waste Disposal (Chemical Waste) (General) Regulation. Significant residual volume means more than 3% volume of the container filled with the drugs. Ampoules or syringes with less than 3% volume filled with cytotoxic drugs can be placed in sharps boxes and disposed of as Group 1 clinical waste. Such sharps boxes (i.e. with sharps contaminated with residual amount of cytotoxic drugs) should be disposed of by incineration and not by any other methods.

- Dead animals and animal tissues, organs and body parts arising from veterinary practices, abattoirs, pet shops, farms, wholesale and retail markets, Chinese medicine practices, or domestic sources; and
- Human corpses.

4. SEGREGATION, PACKAGING AND LABELLING OF CLINICAL WASTE

4.1 Segregation

Clinical waste should be segregated from municipal solid waste or other waste streams at the point of arising. Different groups of clinical waste should be handled differently according to their packaging requirements as specified in section 4.2 of this Code. A sufficient number of appropriate and dedicated containers for holding clinical waste should be placed adjacent to the locations where clinical waste is generated so as to facilitate the segregation.

Clinical waste should be put into appropriate containers as quickly as possible so as to avoid contaminating other materials and to minimize potential human exposure. Containers for holding clinical waste should be covered by secure lids.

4.2 Packaging

4.2.1 General Requirements

Clinical waste should be placed in containers that are leak-proof, impervious to moisture and strong enough to prevent tearing or bursting under normal handling. Such containers should be of one-trip type and should not be reused. They should be capable of being sealed in a manner that can prevent spillage of the contents during transportation.

The containers should be in good condition and free from contamination, damage or any other defects which may impair their safe and secure use. A waste producer should carry out visual inspection of such containers to determine their condition before they are used.

4.2.2 Recommended Types of Containers

Different groups of clinical waste should be placed in the appropriate types of containers in accordance with Table 1. All containers should be securely closed and sealed in accordance with section 4.2.5 of this Code before collection.

Group 1 clinical waste should be put into sharps boxes. Group 2, 3, 4, 5 and 6 clinical wastes should be put into either heavy duty plastic bags or plastic drums that are strong enough to hold the waste without any leakage or breakage. Plastic drums should be used for clinical waste containing liquids.

Group 2, 4, 5 and 6 clinical wastes may be placed together in the same bag/drum. Group 3 clinical waste should be placed in separate bags/drums and should not be mixed with any other groups of clinical waste.

Groups of Clinical Waste	Type(s) of Container	Colour	Sealing
Group 1 - Used or contaminated sharps	Sharps box	YELLOW or combination of WHITE and YELLOW	Proprietary closure
Group 3 - Human and animal tissues	Heavy duty plastic bag	YELLOW	Plastic tie
	Plastic drum	YELLOW	Proprietary closure/tape
Group 2 - Laboratory waste Group 4 - Infectious materials Group 5 - Dressings Group 6 - Other wastes	Heavy duty plastic bag	RED	Plastic tie
	Plastic drum	RED	Proprietary closure/tape

Table 1: Packaging Requirements for Different Groups of Clinical Waste.

4.2.3 Specifications for Different Types of Containers

The design, materials and construction of different types of containers for clinical waste should follow the specifications set out in Annex B.

4.2.4 Colour-Coding of Packaging

To enable easy and unique identification of clinical waste which is essential for subsequent handling by licensed collectors and operators of licensed disposal facilities, the packaging of clinical waste should follow the colour-coding specified in Table 1.

4.2.5 Sealing of Containers

Containers of clinical waste should not be filled above the warning line indicating between 70% and 80% of their maximum volume before sealing. The packaging and sealing should be conducted with care to ensure that no clinical waste adheres to the external surface of the containers.

Sharps boxes should be properly sealed by the proprietary closure whereas plastic drums by the proprietary closure or tape as appropriate. Plastic bags should be sealed by tying the neck securely to prevent spillage. The swan-neck sealing method as shown in Figure 1 is recommended.

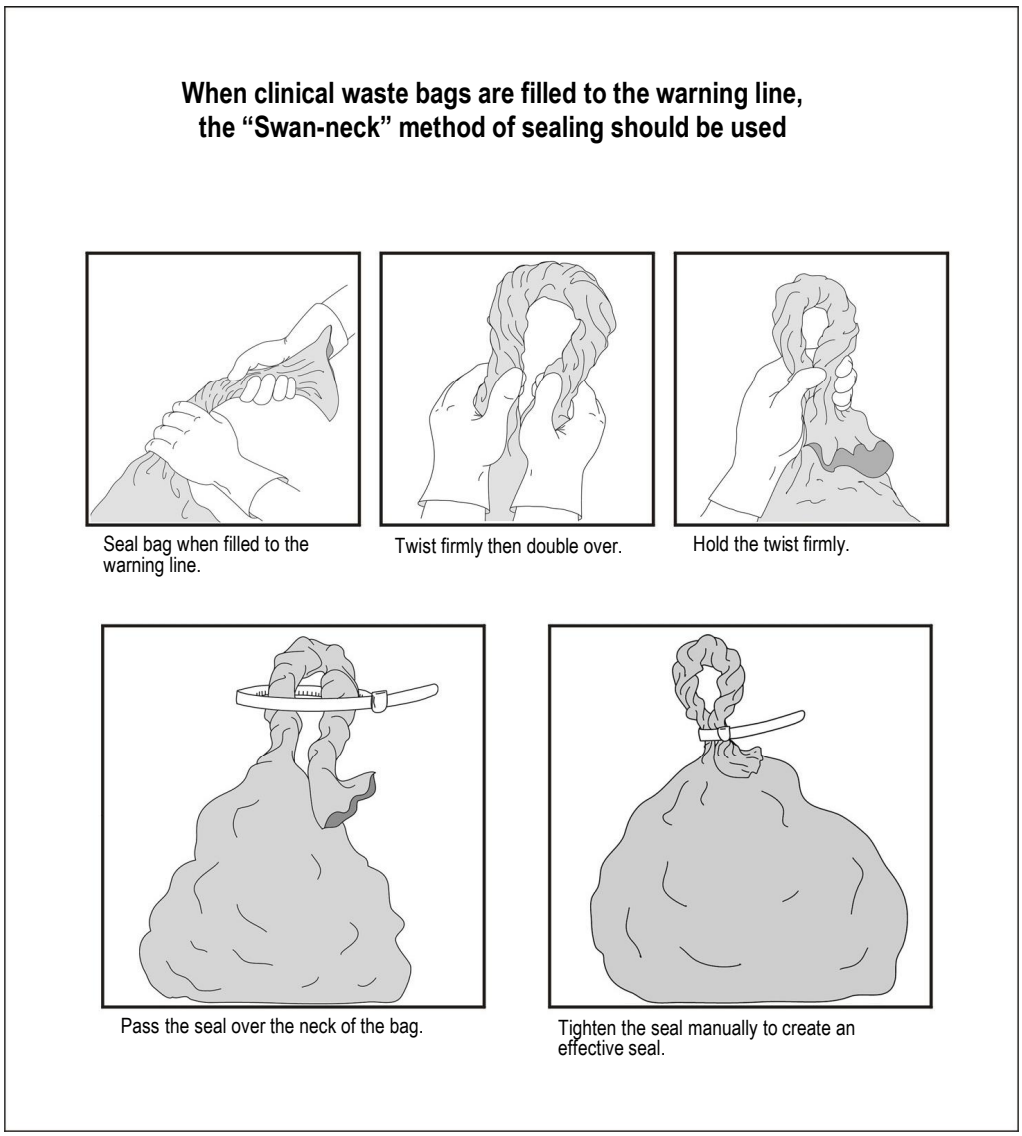

Figure 1: Sealing Method for Clinical Waste Bags.

No staple or unprotected metallic wire tie should be used for sealing or tagging of plastic bags with clinical waste, so as to prevent injury to waste handlers and damage to other bags. Metallic wire tie fully wrapped with plastic is acceptable for use in sealing plastic bags.

Plastic drums containing clinical waste with liquids should be securely sealed to prevent spillage. Absorbent materials may be added into the containers to prevent seepage of liquids as appropriate.

4.3 Labelling

Every container of clinical waste should bear a label as specified in Annex C. The label should be securely affixed or pre-printed on a prominent position of the container which allows the information on the label to be read easily. It is recommended to affix or pre-print a label on each of the opposite sides of the container wherever practicable.

In addition, each container should be marked using BLACK indelible ink, or a tag should be securely attached, to show the origin of the waste (i.e. the name and address of waste producer) and the date of sealing.

If a bag holder (e.g. an ordinary type rubbish bin) is used for holding the plastic bag which is in use, it should be in good condition and should follow the same labelling requirements as for the plastic bag itself. The colour of the bag holder should preferably be the same as that of the bag for easy identification.

4.4 Special Considerations for Handling Chemical Waste Arising from Medical and Dental Sources

Certain clinical waste may contain chemical residues which are classified as chemical waste. In such cases, the chemical residues should be segregated from the clinical waste at source wherever it is practicable. For example, broken thermometer containing mercury should be segregated from other clinical waste. Chemical waste arising from medical and dental sources does not fall within the definition of clinical waste (see section 3.2 of this Code).

Disposal of such waste is subject to the Waste Disposal Ordinance and the Waste Disposal (Chemical Waste) (General) Regulation.

If the chemical waste contains or is contaminated with any clinical waste, pre-treatment measures should be taken as far as practicable to render the waste non-infectious before it is collected by a licensed chemical waste collector.

5. HANDLING AND ON-SITE STORAGE OF CLINICAL WASTE

5.1 Transfer to On-Site Storage Area

5.1.1 General Requirements

Clinical waste containers after being properly sealed and labelled should be transferred from the place of waste generation to an on-site storage area for temporary storage before collection. The containers should be handled with care and should not be left unattended during the transfer of the waste.

5.1.2 Trolleys or Carts Used for the Transfer of Clinical Waste

Dedicated trolleys and carts should be used for the transfer of clinical waste on the premises. They should be designed and constructed according to the following specifications :

- The surfaces should be smooth, with no rough or sharp edges (which may damage the packaging of clinical waste);
- Impermeable materials should be used and the design should provide containment of any spillage of waste which may occur in transit;
- The trolleys or carts should be easily cleaned and drained; and
- The overall design should allow the bags and containers to be properly retained in the trolleys or carts, and to be safely loaded/unloaded and handled without difficulty.

The trolleys and carts should be cleaned at the end of each working day and thoroughly disinfected at regular intervals.

5.2 Storage of Clinical Waste

5.2.1 Provision of On-site Storage Area

Waste producers should provide suitable and adequate area for temporary on-site storage of clinical waste. The storage area should be located close to the sources of waste generation so as to minimize waste handling and to facilitate management control.

The storage area should be enclosed on at least three sides by wall, partition or fence. The enclosures should be rigidly erected and fixed to the area. An illustration of a storage area layout is shown in Figure 2. Depending on the waste generation quantity, a small lockable cupboard as shown in Figure 3 can also be used. Where possible, all clinical waste should be contained in transit skips inside the storage area.

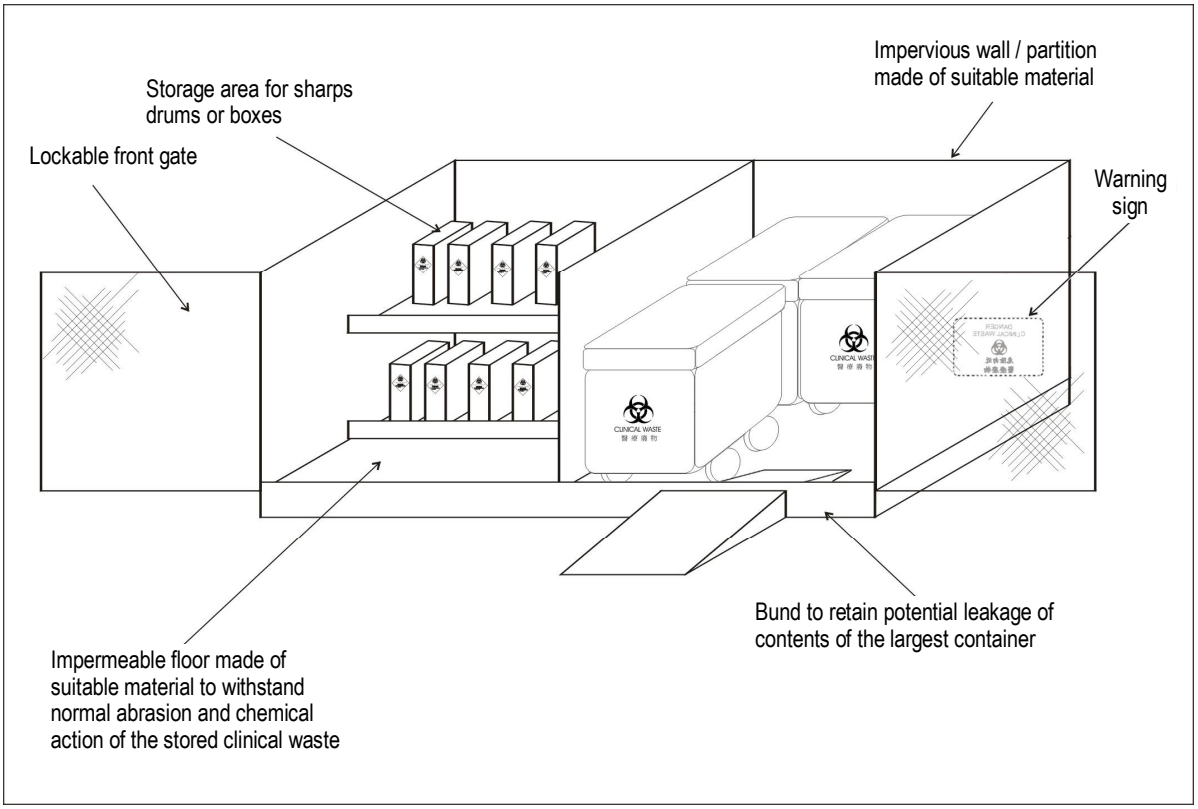

Figure 2: Schematic Drawing of a Storage Area for Clinical Waste.

5.2.2 Specifications of Storage Area

The design of storage area will depend on the quantity and types of clinical waste involved. In all cases, the storage area should be designed to meet the following requirements and specifications :

- Used for storage of clinical waste only;
- With an adequate capacity to cater for the quantity of waste produced and the frequency of waste collection;
- Exhibiting a warning sign on the external surface of the vertical structure of the area at or near its entrance. A warning sign is shown in Figure 4;

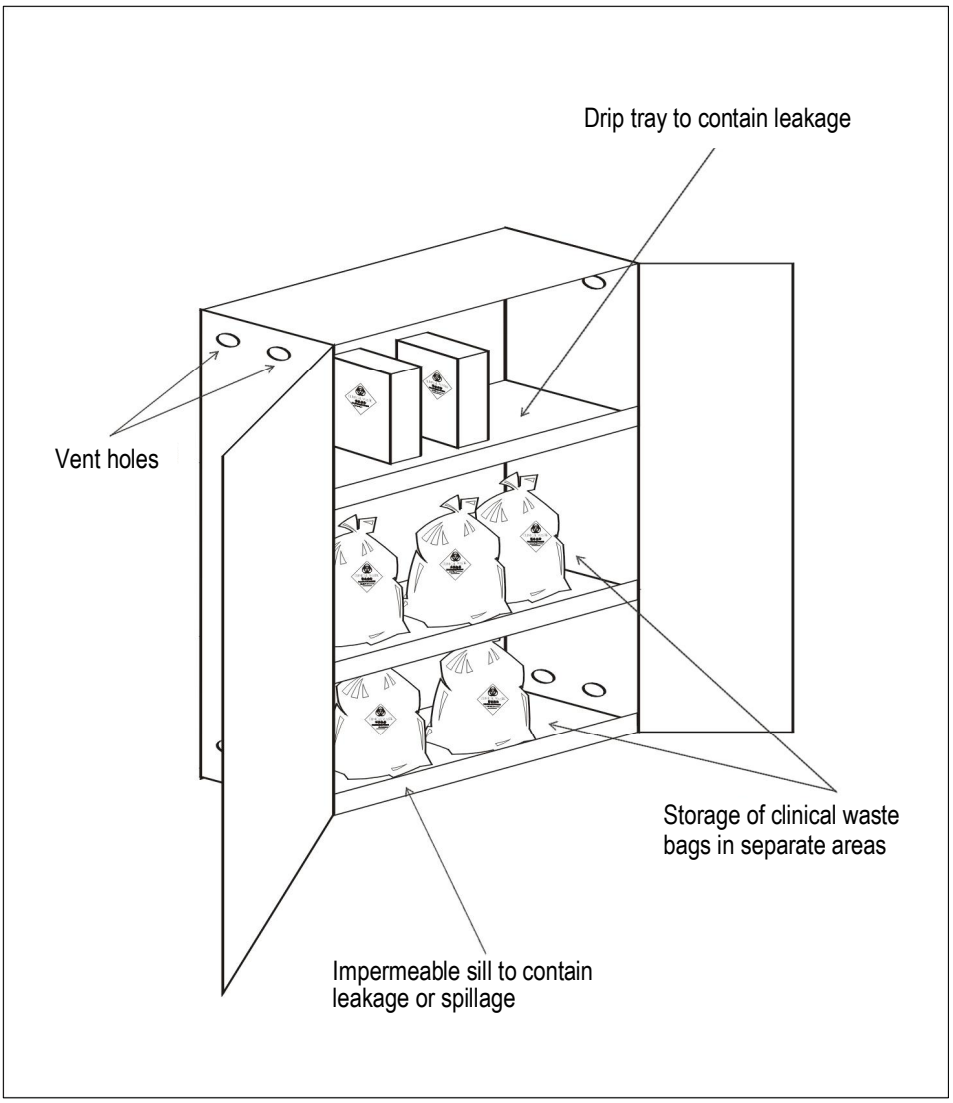

Figure 3: Schematic Drawing of a Clinical Waste Storage Cupboard.

- Protecting the integrity of the waste packaging;
- Protecting the waste containers therein from the weather (wind, rain, flooding, etc);
- With cover and lockable door to prevent access by unauthorized persons, animals, birds, and free from rodent and insect infestations;
- With adequate ventilation and lighting;
- Sited on a well-drained, impervious hard-standing area provided with wash down facilities, or as a lockable room or cupboard which can be cleaned and disinfected;

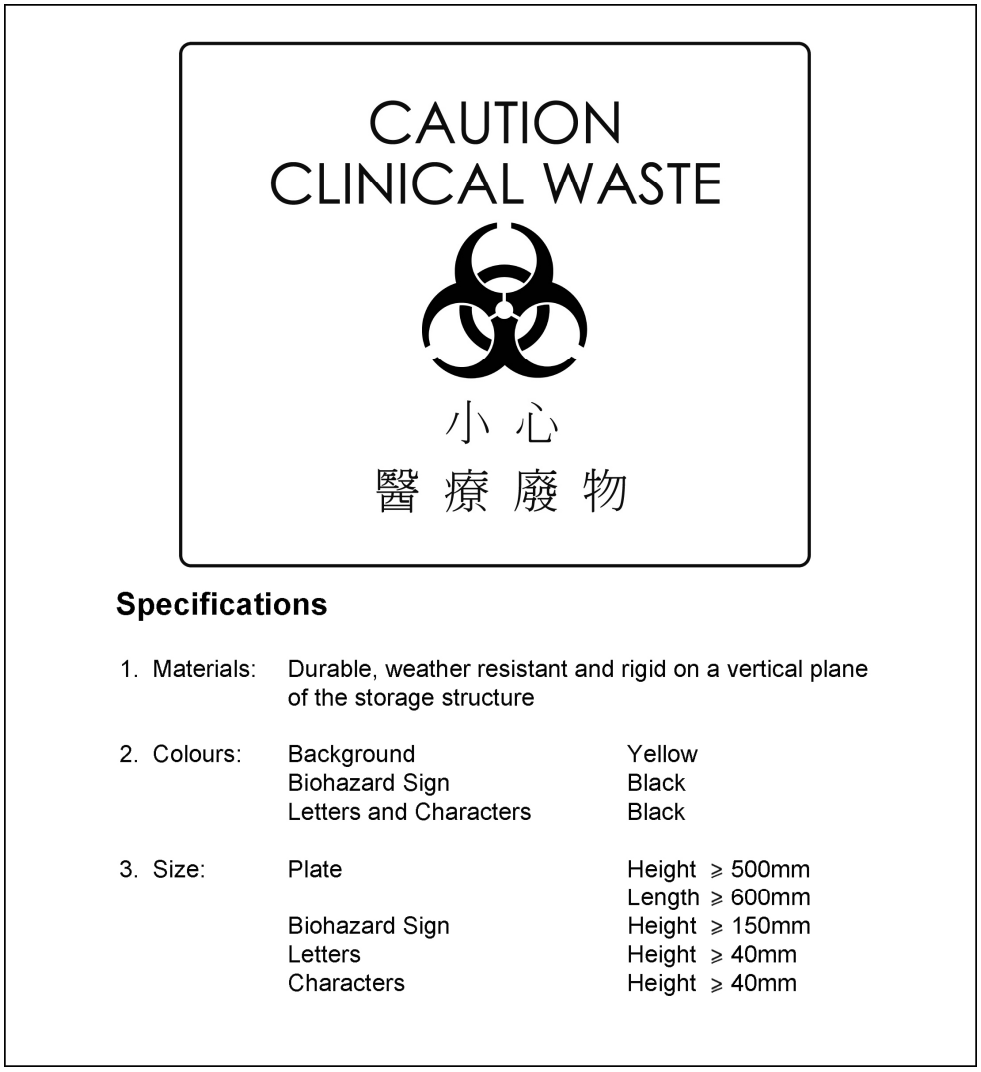

Figure 4: Warning Sign for Storage Area.

- Installed away from any air-intake of building ventilation;
- Not adjacent to any food stores or food preparation areas; and
- Accessible to waste collection vehicles where possible.

5.2.3 Refrigeration of Clinical Waste

Clinical waste that may rapidly decompose (e.g. waste containing human or animal tissues) should be stored under refrigeration to prevent nuisance such as obnoxious odour.

5.2.4 Other Requirements

Where any clinical waste with liquids is stored, the storage area should be designed to be capable of containing any spillage of liquids. The area should be cleaned and disinfected promptly and thoroughly in case any waste spillage occurs.

Clinical waste containers should not be compacted to avoid damaging their packaging when placed in the storage area. Stacking of bagged clinical waste should also be avoided as far as possible to avoid damage to the bags.

5.3 Collection Point

Subject to the authorization granted by the Director, a waste producer may use his premises where he produces clinical waste (e.g. hospital, clinic, medical laboratory) to provide temporary storage area as an "on-site collection point", for receiving clinical waste generated by him in other premises or delivered by other small waste producers.

Waste producers who intend to set up on-site collection points should obtain authorization from the Director and should follow such terms and conditions specified in the authorization, and more details can be obtained from the Environmental Protection Department. The objective is to minimize the risks of pollution to the environment and the danger to public health that might be caused by the operation of these collection points.

Licensed collectors may also set up collection points for clinical waste if they are authorized to do so under their waste collection licences. The operation of such collection points should meet the requirements specified in the licence.

The delivery of clinical waste from the premises of other small waste producers to the collection point should be conducted by healthcare professionals in accordance with the requirements set out in section 6.4 of this Code. A waste producer who operates an on-site collection point should check and confirm the professional identity of the person who delivers the waste. The operator of an on-site collection point should prepare and issue a copy of the record of waste delivery to the person who delivers the waste. The operator of an on-site collection point should also keep the record and produce it to the Director for inspection upon request. The record should include the following information and as required in the authorization :

- Å The name, address and telephone number of the person who produced or caused to produce the clinical waste;
- Å The name, address and telephone number of the person who delivers the clinical waste to the collection point;
- Å The date and time of delivery of the clinical waste;
- Å The quantity of the clinical waste; and
- Å Other particulars relating to the clinical waste as may be specified by the Director in granting the authorization.

6. COLLECTION AND TRANSPORTATION OF CLINICAL WASTE

6.1 Collection Service

Collection of clinical waste to a licensed disposal facility should be conducted by licensed collectors in accordance with the requirements specified in waste collection licences and in full compliance with the Regulation.

Transit skips as specified in section 6.3.1 of this Code should be used to collect clinical waste from waste producers. Licensed collectors should check and ensure proper packaging, sealing and labelling of the waste containers with reference to the relevant requirements set out in this Code before

placing them into transit skips. Group 3 clinical waste (Human and Animal Tissues) should be put into dedicated transit skips without mixing with other groups of clinical waste. If the clinical waste has already been placed into transit skips during storage by waste producers as in the case of some hospitals, licensed collectors should ensure the transit skips are securely closed and fastened and properly labelled according to section 6.3.1 of this Code before collecting the skips.

No clinical waste should be transferred from one transit skip to another during waste collection under normal circumstances. Where the premises of certain waste producers are not accessible to the transit skips, it would be acceptable to use smaller skips to collect clinical waste from these waste producers and transfer the waste to the transit skips. Such transfer operation should be governed by the terms and conditions of waste collection licence.

6.2 Frequency of Collection

The frequency of collection should be agreed between waste producer and licensed collector with due account of the nature and quantity of clinical waste generated. In order to minimize potential health hazards, prolonged storage of clinical waste should be avoided. Guidelines on the collection frequency for different groups of clinical waste are set out in Table 2.

Groups of Waste	Collection Frequency
Group 1 - Used and contaminated sharps	Once every 2 weeks(1)
Group 2 - Laboratory waste *Group 5* – Dressings	Daily(1)
Group 3 - Human and animal tissues	Daily (At least once every 10 days if stored below 5^{O}C; monthly if stored below 0^{O}C)
Group 4 - Infectious materials	Daily
Group 6 - Other wastes	Collected together with other groups of clinical waste or as soon as practicable
Note (1): At places where waste is generated in very small quantity, a lower collection frequency may be acceptable.	

Table 2: Collection Frequencies for Different Groups of Clinical Waste.

Where clinical waste is generated at very small quantity, a longer time interval between the collection trips of the waste is acceptable, upto a maximum of 1 month for Group 1 waste and a maximum of 1 week for Group 2 and 5 wastes.

6.3 Transportation of Clinical Waste

6.3.1 Transit Skips

The specification of transit skips used for the collection of clinical waste should meet the requirements of mechanical handling equipment of the collection vehicles and the licensed disposal facility. Each skip should bear words and characters of a minimum height of 40mm in BLACK stating, for clinical waste other than those requiring refrigeration, "CLINICAL WASTE" in English and "醫 療 廢 物" in Chinese, and, for clinical waste requiring refrigeration, "CLINICAL WASTE FOR REFRIGERATION" in English and "冷藏醫療廢物" in Chinese, and the international bio-hazard sign as given in Annex C with a minimum height of 240mm in BLACK. Transit skips for Group 3 clinical waste should be in YELLOW colour or with a prominent label in YELLOW to facilitate identification of the waste. Each skip should bear a unique serial number which should be displayed in prominent BLACK figures and/or letters for easy identification and recording purpose.

The transit skips should meet the following requirements :

- Dedicated for the purpose of storing packaged clinical waste only;
- Provided with lids and capable of being fastened;
- Proof against spillage of the contents and infiltration of rainwater through the lid or cover;
- Proof against harbourage for insects and vermin, and accumulation of clinical waste on edges or in crevices, etc.;
- Multiple-trip type and reusable; and
- Capable of being readily disinfected or decontaminated by steam.

The transit skips should be maintained in good condition and in a clean and sanitary state. The covers of transit skips should be closed and fastened at all times except during loading or unloading of clinical waste.

6.3.2 Loading of Transit Skips

Loading and unloading of transit skips onto and from the collection vehicle should be performed with care. Staff involved should -

- be competent, suitably trained, supervised, and authorized to perform such a duty; and
- wear appropriate protective clothing such as gloves, industrial safety shoes, aprons and masks (see Annex D).

A licensed collector should ensure that the covers of all transit skips are securely closed and fastened before loading the skips onto a collection vehicle. The door of the cargo compartment of the vehicle should be securely locked at all times except during loading or unloading.

6.3.3 Collection Vehicle/Vessel

Transportation of transit skips should be undertaken only when the covers of skips are securely closed and fastened. All transit skips whether loaded or not should be secured against movement inside the collection vehicle to avoid skidding or falling during transportation.

Transportation by road should be undertaken by dedicated vehicles only in accordance with the conditions specified in the waste collection licence. Vehicles employed for the transportation of clinical waste should have the following features :

- Equipped with mechanical handling equipment to enable the transit skips to be loaded and unloaded with minimal manual effort and human contact with the skips;
- Capable of providing secure retention of transit skips when travelling, and maintaining skips in a good and sanitary condition;
- Comprise either a fully enclosed lorry having a separated cab, or a unitary vehicle in which the driver's cab is permanently separated from the cargo compartment by a sealed fixed bulkhead;

- The cargo compartment should be provided with adequate lighting and ventilation, lockable doors, spillage-proof and capable of being hygienically cleaned and disinfected;
- Equipped with a tool kit for minor repairs;
- Equipped with sufficient safety gear, decontamination and cleaning equipment and materials for dealing with spillage (e.g. personal protective clothing, spare plastic bags and sharps boxes, disinfectant, absorbent granules, brushes, mops, shovels and buckets) (see Annex D); and
- Equipped with suitable equipment such as mobile telephone to facilitate communication with disposal facility operator and the Environmental Protection Department.

A proper warning panel should be displayed at both the front and rear ends of the vehicle to indicate the carriage of clinical waste (details in Annex E).

At least one portable fire extinguisher with a minimum capacity of 2 kg of dry powder, or other suitable extinguisher with an equivalent test fire rating of at least 5A and 34B as defined in *British Standard BS EN 3-7:2004*, should be provided in the vehicle at an accessible location.

Vehicles employed to collect, remove or transport clinical waste should be -

- maintained in sound condition and roadworthy and cleaned at least once per week;
- thoroughly cleaned and disinfected immediately following any spillage inside the vehicle or when contaminated with any clinical waste;
- prohibited from carrying food or pharmaceutical products or any materials which require good sanitary conditions;
- prohibited from carrying any material other than clinical waste unless thoroughly cleaned and disinfected beforehand; and
- prohibited from transportation of any other waste, material or substance during the course of the transportation of clinical waste.

Any vehicle being used for the carriage of clinical waste should not be left unattended unless it is properly locked up and safely parked in an isolated location such as an open space separated from public roads and dwellings.

Any marine vessel used for the transportation of transit skips should be equipped with the necessary facilities to store the skips securely and enable the embarkation and disembarkation of the skips in a safe and secure manner. The marine vessel should have similar safety precaution features as for transportation vehicles subject to necessary modifications.

The transportation of clinical waste should be supervised by trained operational personnel to ensure the waste is handled safely and properly.

6.3.4 Delivery of Clinical Waste to a Licensed Disposal Facility

Licensed collectors should deliver the clinical waste to a licensed disposal facility within 24 hours after collection from waste producers. Once clinical waste is loaded onto a collection vehicle, the waste should stay in the same vehicle until it is delivered to a licensed disposal facility. Transferring clinical waste from one collection vehicle to another should be avoided, unless during the transfer of clinical waste from a vessel to a vehicle (or vice versa) in the transportation of clinical waste from outlying islands, or in the event of accidents or emergencies, or otherwise authorized.

Licensed collectors should liaise in advance with the operator of licensed disposal facility on the appropriate delivery schedule, waste quantity, handling procedures and other arrangements as necessary for the reception of clinical waste by the facility.

If the delivery cannot be made within 24 hours, licensed collectors are required to inform the Director as soon as reasonably practicable. In such circumstance, licensed collectors should maintain the waste in sanitary conditions and prevent access by the public. Group 3 waste should be refrigerated below 5^{o}C. Licensed collectors should arrange to deliver the clinical waste to a licensed disposal facility as soon as practicable and report to the Director thereafter in writing. Licensed collectors should include in the report such particulars as the quantity of the waste, the date of collection,

the reason for failing to deliver the waste to a licensed disposal facility within 24 hours after collection, the particulars and manner in which such waste was stored prior to the delivery to disposal facility, and the date of delivery to disposal facility.

6.4 Delivery of Clinical Waste by Healthcare Professionals

Waste producers who are healthcare professionals[2] may deliver their clinical waste to a collection point or licensed disposal facility. They may ask their employees who are also healthcare professionals to deliver the waste on their behalf. A waste collection licence is not required for such delivery of clinical waste. However, the waste delivery should be subject to the requirements specified in the Regulation, which include the following :

- They should not carry more than 5 kg of clinical waste at any one time;
- No Group 4 waste should be delivered;
- Group 1 waste should be packaged in containers that are puncture-resistant, shatter-proof and leak-proof (e.g. sharps boxes);
- Other groups of clinical waste should be packaged in containers that are made of rigid material, impervious to moisture and leak-proof, and that will not rip, tear or burst under normal conditions of handling;
- The clinical waste should be properly packaged to prevent spillage, and the containers should be labelled in accordance with the specifications set out in Annex C;
- Only private car[3] within the meaning of the Road Traffic Ordinance (Cap. 374) should be used as a means of transport in delivering the clinical waste; and

[2] Healthcare professionals include registered medical practitioners, dentists and veterinary surgeons, registered or listed Chinese medicine practitioners, and registered or enrolled nurses as defined in the Waste Disposal (Clinical Waste) (General) Regulation.

[3] Private car means a motor vehicle constructed or adapted for use solely for the carriage of a driver and not more than 7 passengers and their personal effects but does not include an invalid carriage, motor cycle, motor tricycle or taxi.

- The clinical waste should be delivered directly to a collection point or licensed disposal facility within 24 hours and should not be left unattended during the delivery.

In addition, the healthcare professionals should carry adequate and appropriate first-aid equipment for use in case of injury to any person caused by the clinical waste during the delivery. They should also carry appropriate equipment for cleaning up spilled clinical waste (e.g. spare red bags and sharps boxes) in case of spillage. A recommended list of equipment for cleaning up spilled clinical waste is provided at Annex D. The healthcare professionals should exercise professional judgment in carrying adequate quantity of such equipment by reference to the amount of clinical waste they deliver.

7. RECORD KEEPING

7.1 Trip Ticket

For the purpose of keeping track of the waste movement in a waste consignment, licensed collectors are required to record and certify on a trip ticket the quantity of clinical waste collected from a waste producer and provide the waste producer with a copy of the trip ticket (or a receipt in-lieu of the trip ticket) for each consignment of clinical waste. A waste producer should check the information recorded on the trip ticket or receipt prior to handing over his waste to a licensed collector and keep the trip ticket or receipt as record for the waste consignment.

The licensed collector should pass the trip ticket to the operator of a licensed disposal facility for certification upon delivery of the clinical waste and obtain a certified copy of the ticket for record.

Licensed collectors should keep copies of the trip tickets and the receipts issued, and should produce such copies to the Director for inspection upon request as specified in their licences.

7.2 Record Keeping by Waste Producers

Waste producers should keep a record of the clinical waste consigned to a licensed collector or delivered to a collection point or licensed disposal facility, and should produce the record to the Director for inspection when so required. The record should include the following information :

- Å The date of consignment/delivery;
- Å The quantity of clinical waste consigned/delivered;
- Å The address of the premises from which the clinical waste is delivered;
- Å For consignment to a licensed collector, the name of the licensed collector; and
- Å For delivery to a collection point or licensed disposal facility, the name of the person who delivers the waste, and the name and address of the collection point or disposal facility.

The Director may require a waste producer to produce records of waste consignment or delivery for inspection. Such records may include copy of trip ticket or receipt of waste consignment issued by a licensed collector, or receipt of waste delivery issued by the operator of a collection point or licensed disposal facility. Waste producers should keep such records for 12 months from the date of consignment/delivery.

8. CLINICAL WASTE MANAGEMENT PLAN

Waste producers should develop a Clinical Waste Management Plan to set out the detailed requirements and procedures for proper handling of clinical waste for reference by the staff; and identify a responsible person for co-ordinating the various activities relating to clinical waste management. The responsible person should have relevant experience and appropriate training. He should have sufficient authority to carry out the task of maintaining the necessary standards of safety and good practice for clinical waste management. He should be responsible for all aspects of clinical waste management but may delegate the responsibilities for day-to-day clinical waste management to other trained staff.

The Clinical Waste Management Plan should cover the following areas :

- The statutory requirements for management of clinical waste;
- Sources and types of clinical waste generated on the premises;
- Persons responsible for each element of the clinical waste management system and chains of authority, including their names, contact addresses and telephone numbers;
- Operational and maintenance procedures covering items or equipment used for clinical waste management (e.g. containers, storage areas, transport equipment, safety equipment), and procedures for the handling and management of clinical waste;
- Training programme for all relevant staff;
- Auditing procedures for compliance monitoring;
- Procedures for dealing with emergencies due to spillage, leakage or accidents arising from the handling and storage of clinical waste; and
- Documentation and record keeping, including trip tickets or receipts from licensed collectors and staff records, e.g. training, accident records.

A sample framework for a Clinical Waste Management Plan is given in Annex F. Waste producers should review and update the content of the Clinical Waste Management Plan regularly.

9. TRAINING, SAFETY AND EMERGENCY RESPONSE PROCEDURES

All waste producers and licensed collectors should make the necessary arrangement and provide adequate supervision to prevent any danger or injury to their staff arising from the handling of clinical waste. They should take all such precautions as are necessary for preventing any danger to public health or safety, any pollution to the environment and any nuisance to the neighbouring area in storing, removing, collecting, receiving, delivering and transporting of clinical waste.

9.1 General Requirements

Responsible personnel for the management of clinical waste and frontline staff involved in handling clinical waste should all receive proper training.

Direct handling of clinical waste containers should be minimized as far as possible through provision of bins on wheels, trolleys or carts, transit skips, etc.

Regular inspection of clinical waste storage area (and its access) should be conducted to ensure that it is free from obstruction and is kept dry and clean.

No person should be allowed to eat, drink or smoke during the handling of clinical waste. Warning signs indicating "NO SMOKING, NO EATING AND DRINKING" should be posted at all transportation vehicles and storage area.

Safety and health requirements under other relevant ordinances (e.g. Occupational Safety and Health Ordinance) and regulations should be observed.

9.2 Safety Equipment and Training

Employers should ensure that all employees involved in handling clinical waste are provided with adequate safety information, protective equipment and training.

All staff who may be required to handle or transfer clinical waste should be trained to -

- follow safety procedures and wear appropriate personal safety and protective gear before handling clinical waste (see Annex D);
- identify different types of clinical waste and know their packaging and handling requirements;
- seal different types of waste containers;

- label different types of waste containers;
- handle plastic bags by the neck only;
- avoid damaging the packaging;
- handle accidental spillage and leakage of clinical waste;
- check that waste containers and their seals are not broken or damaged after movement;
- know the precautions in dealing with special types of clinical waste (e.g. sharps, infectious waste); and
- observe personal hygiene practices, e.g. wash hands thoroughly after handling clinical waste.

9.3 Emergency Procedures

Employers should establish procedures for handling emergencies involving spillage or leakage of clinical waste and make available the procedures to their staff for reference.

In the event of emergencies involving spillage or leakage of clinical waste, the spillage or leakage should be stopped as soon as practicable and the spilled or leaked waste cleaned up promptly. The affected area should be properly cleaned and disinfected. Absorbent materials, disinfection chemicals, protective clothing, masks, eye protection, gloves should be used as appropriate in the clean-up and disinfection operations (see Annex D).

All materials arising from the clean-up of spilled or leaked clinical waste should be disposed of as clinical waste and should be properly packaged and labelled before disposal.

All spillage or leakage incidents should be recorded and reported to the responsible person according to the established procedures. Follow-up investigations of the incidents should be conducted so that improvement measures can be taken to avoid recurrence of similar incidents in future.

Annex A

List of Clinical Waste Producers

Major clinical waste producers:

- Public hospitals, clinics and institutions managed by the Hospital Authority;
- Private hospitals and maternity homes defined under the Hospitals, Nursing Homes and Maternity Homes Registration Ordinance (Cap. 165);
- The Prince Philip Dental Hospital; and
- Government clinics and medical laboratories (whether they are managed by the Department of Health or other Government departments).

Small clinical waste producers:

- Private medical clinics/practices;
- Private dental clinics/practices;
- Private dental, medical, veterinary or pathological laboratories;
- Private Chinese medicine clinics/practices;
- Residential care homes for the elderly;
- Universities with medical teaching or research (including Chinese medicine);
- Pharmaceutical companies with medical research;
- Private veterinary clinics/practices;
- Nursing homes;
- Health and beauty centres where medical practices are conducted; and
- Other relevant organizations.

Annex B

Specifications for Different Types of Containers for Clinical Waste

1. Sharps box

- Conform with *British Standard BS 7320:1990* in respect of resistance to penetration and resistance to leakage after vertical dropping and toppling or similar specification for sharps containers;
- Capable of being sealed;
- Provided with a handle that is not part of the closure device, wherever practicable;
- Combustible and capable of being safely incinerated, and should not be made from polyvinylchloride (PVC);
- Legibly marked with a horizontal line to indicate when the sharps box is filled to between 70% and 80% of its maximum volume, together with the words "WARNING – DO NOT FILL ABOVE THE LINE", wherever practicable;
- Coloured in yellow or combination of white and yellow; and
- Capable of being marked by indelible ink and securely attached by labels.

2. Heavy duty plastic bag

- With a maximum nominal capacity of 0.1 m^3;
- Of minimum gauge of 150 microns if made from low density polyethylene, or 75 microns if made from high density polyethylene or polypropylene, and should not be made from polyvinylchloride (PVC);
- Of suitable size and shape to fit the holder which supports the bag in use;
- Legibly marked with a horizontal line to indicate when the bag is filled to between 70% and 80% of its maximum volume, together with the words "WARNING – DO NOT FILL ABOVE THE LINE";
- Coloured in red (clinical waste other than Group 1 or 3 wastes) or yellow (for Group 3 waste); and
- Capable of being marked by indelible ink and securely attached by labels.

3. Plastic Drum

- Capable of being sealed;
- Proof against spillage of their contents;
- Combustible and capable of being safely incinerated, and should not be made from polyvinylchloride (PVC);
- Legibly marked with a horizontal line to indicate when the drum is filled to between 70% and 80% of its maximum volume, together with the words "WARNING – DO NOT FILL ABOVE THE LINE";
- Coloured in red (clinical waste other than Group 1 or 3 wastes) or yellow (Group 3 waste); and
- Capable of being marked by indelible ink and securely attached by labels.

Annex C

Labelling of Clinical Waste Containers

Each container should bear on the outside of the container a label of such dimensions as are specified in Part 1 below, and the label should contain the symbol specified in Part 2 below.

PART 1
DIMENSIONS OF LABEL

Type of container	Dimensions of label
Sharps container of a capacity of less than 2 Litres	not less than 40 mm x 40 mm
Sharps container of a capacity of 2 Litres or more	not less than 75 mm x 75 mm
Container other than sharps container	not less than 150 mm x 150 mm

PART 2
SYMBOL IN LABEL

Specifications of the symbol:

1. The colours of the symbol should be as follows :
   Border – black
   Background – white or primary colour of the container
   Words and characters – black
   International Biohazard sign - black

2. The International biohazard sign appearing in the symbol should have a minimum height as follows:

Type of container	Minimum height
Sharps container of a capacity of less than 2 Litres	16 mm
Sharps container of a capacity of 2 Litres or more	30 mm
Container other than sharps container	60 mm

3. Each of the English words appearing in the symbol should have a minimum height as follows:

Type of container	Minimum height
Sharps container of a capacity of less than 2 Litres	3 mm
Sharps container of a capacity of 2 Litres or more	5 mm
Container other than sharps container	10 mm

4. Each of the Chinese characters appearing in the symbol should have a minimum height as follows:

Type of container	Minimum height
Sharps container of a capacity of less than 2 Litres	4 mm
Sharps container of a capacity of 2 Litres or more	7 mm
Container other than sharps container	15 mm

Annex D

Safety Equipment and General Precautions for Clinical Waste and Spillage Handling

1. Personal Safety and Protective Gear

Disposable gloves and aprons
Heavy duty gloves
Safety glasses or goggles
Industrial aprons
Masks
Protective clothing
Safety shoes or boots
Eye-wash bottles or devices
First aid kits

2. Equipment

Fire extinguishers
Absorbent materials such as vermiculite or sawdust
Disinfectant
Plastic bags, drums and sharps boxes
Paper tissues and towelling
Dustpans and brushes
Mops, shovels and buckets
Scoops
Tweezers or forceps

3. General Precautions

Disposable gloves and apron should be worn to minimize the risk of skin contamination when clearing up body fluids. In certain circumstances, face visors may be necessary to protect employees from potential splashing.

Heavy duty gloves and industrial apron should be worn when handling clinical waste containers. Sharps boxes should be picked up and carried by the handle only, if available.

Safety shoes or boots should be worn to protect against the dropping of waste containers. The soles of such shoes or boots should be made of such material to offer protection against slippery and piercing through by any sharps on floor.

In case there is an injury inflicted during the handling of clinical waste, the person involved should seek medical advice and treatment or attend the emergency unit of a hospital as appropriate.

Annex E

Specifications for the Hazard Warning Panel for Clinical Waste Collection Vehicle

One of the two versions (Version A and Version B) of the hazard warning panel as shown in the following figure should be displayed at the front and rear of the clinical waste collection vehicle in a position that does not conceal any lights, licence plates or other legally required signs or markings. Both versions are acceptable, and the choice is mainly governed by the space available for the sign.

Specifications:

- **Material** : Aluminium plate (1-2 mm thick)
- **Finish** : Reflective background
- **Colour** : Border - Black
  Background - Yellow
  Words and Characters - Black
- **Size** : Words and Characters ≥ 40 mm in height
  Plate (Version A): Height ≥ 200 mm; Width ≥ 750 mm
  Plate (Version B): Height ≥ 340 mm; Width ≥ 500 mm

Version A

CAUTION: CLINICAL WASTE
小心　醫療廢物

Version B

CAUTION:
CLINICAL WASTE
小 心
醫療廢物

Annex F

Sample Framework for a Clinical Waste Management Plan

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2 DEFINITION OF CLINICAL WASTE
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3.3 Clinical Waste vs Non-clinical Waste

4 PACKAGING
4.1 Bags and Bag-holders
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4.3 Plastic Drums

5 SEALING AND LABELLING
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6 INTERNAL COLLECTION SYSTEM
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7 HANDLING OF CLINICAL WASTE

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Annex II

Code of Practice for the Management of Clinical Waste

- Small Clinical Waste Producers

Environmental Protection Department
The Hong Kong Special Administrative Region Government
February 2010

PREFACE

This Code of Practice is a statutory document published under Section 35 of the Waste Disposal Ordinance (Cap. 354) by the Secretary for the Environment after consultation with the Advisory Council on the Environment. The purpose of this Code is to provide guidance to small clinical waste producers to assist them to comply with the legal requirements of the Waste Disposal Ordinance and the Waste Disposal (Clinical Waste) (General) Regulation. Clinical waste is potentially dangerous because it may contain infectious materials and sharps. It is important to exercise special caution in the handling and management of clinical waste so as to minimize any danger to public health or risk of pollution to the environment.

Enquiries concerning this Code or the regulatory requirements may be addressed to the Environmental Protection Department at :

Address: Territorial Control Office
Environmental Protection Department
25/F, Southorn Centre,
130 Hennessy Road,
Wanchai, Hong Kong.

Telephone: 2835 1055
Facsimile: 2305 0453
E-mail: enquiry@epd.gov.hk

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1. INTRODUCTION

Clinical waste arises from a number of sources, including hospitals and clinics, medical and dental surgeries, veterinary practices, medical teaching establishments, medical research and laboratories, and nursing homes. Clinical waste is potentially dangerous because it may contain infectious materials and sharps such as needles. In addition, clinical waste containing human organs and body parts may be offensive in nature. It is therefore important to exercise special caution in the handling and management of clinical waste in order to minimize its potential danger to public health or pollution to the environment.

This Code of Practice ("Code") is designed to provide guidance to small clinical waste producers ("waste producers") to assist them to comply with the legal requirements of the Waste Disposal Ordinance (Cap. 354) and the Waste Disposal (Clinical Waste) (General) Regulation ("the Regulation"). As major and small waste producers have different modes of operation, a separate "*Code of Practice for the Management of Clinical Waste - Major Clinical Waste Producers and Waste Collectors*" has also been published to provide guidance to major waste producers. A list of major and small waste producers is given at Annex A.

2. THE DUTY OF CARE OF CLINICAL WASTE PRODUCERS

Waste producers have a duty of care to take the following measures in managing the clinical waste generated from their premises :

- Segregate clinical waste from other waste streams and prevent clinical waste from entering the disposal chain of municipal solid waste;
- Package and label clinical waste properly to enable easy identification;
- Provide safe and secure temporary storage area for clinical waste; and
- Ensure their staff take all necessary safety measures in handling clinical waste, and provide sufficient training to them.

Specifically, the Regulation requires all waste producers to arrange for their clinical waste to be properly disposed of. Waste producers are deemed to have discharged the duty if they consign the waste to a licensed clinical waste collector ("licensed collector"), or arrange the waste to be delivered to a collection point or licensed clinical waste disposal facility ("licensed disposal facility") according to the requirements specified in the Regulation. The Regulation also requires waste producers to keep records of the clinical waste consigned to licensed collectors or delivered to a collection point or licensed disposal facility, and to produce such records for inspection upon request by the Director of Environmental Protection ("the Director").

3. DEFINITION OF CLINICAL WASTE

3.1 Types of Clinical Waste

Under the Waste Disposal Ordinance, clinical waste means waste consisting of any substance, matter or thing generated in connection with -

- a dental, medical, nursing or veterinary practice;
- any other practice, or establishment (howsoever described), that provides medical care and services for the sick, injured, infirm or those who require medical treatment;
- dental, medical, nursing, veterinary, pathological or pharmaceutical research; or
- a dental, medical, veterinary or pathological laboratory practice,

and which consists wholly or partly of any of the materials specified in one or more of the groups listed below :

Group 1 - Used or Contaminated Sharps

Syringes, needles[1], cartridges, ampoules and other sharp instruments which have been used or which have become contaminated with any other group of clinical waste.

[1] Needles include acupuncture needles.

Group 2 - Laboratory Waste

Unsterilized laboratory stock cultures, or cultures, of infectious agents and potentially infectious waste with significant health risk from dental, medical, veterinary or pathological laboratories.

Note: "potentially infectious waste with significant health risk from dental, medical, veterinary or pathological laboratories" refers to those unsterilized materials or devices used to culture, transfer, inoculate or mix the laboratory stock cultures, or cultures, of infectious agents. Examples include culture dish, bottle, flask, tube, pipette, pipette tip, inoculation loop and inoculation wire.

Group 3 - Human and Animal Tissues

All human and animal tissues, organs and body parts as well as dead animals, but excluding –

(a) dead animals and animal tissues, organs and body parts arising from a veterinary practice or a Chinese medicine practice; and

(b) teeth arising from a dental practice.

Note: Group 3 clinical waste is not intended to cover small quantities of human and animal tissues which cannot be completely separated from items such as dressings.

Group 4 - Infectious Materials

Infectious materials from patients with the following pathogens - Crimean/Congo haemorrhagic fever, Ebola, Guanarito, Hendra, Junin, Kyasanur forest disease, Lassa fever, Machupo, Marburg, Nipah, Omsk, Russian spring-summer encephalitis, Sabia, Variola viruses; Herpesvirus simiae (B virus); and Severe Acute Respiratory Syndrome Coronavirus. Any materials contaminated by the above infectious materials are also classified as Group 4 waste.

Note: The Director may, by notice published in the Gazette, amend the list of pathogens under this group.

Group 5 - Dressings

Surgical dressings, swabs and all other waste dribbling with blood, caked with blood or containing free-flowing blood.

Group 6 - Other Wastes

Such other wastes as specified by the Director by notice published in the Gazette if in his opinion such wastes –

(a) are likely to be contaminated with infectious materials from patients falling within such case definition as specified in the notice; and

(b) may pose a significant health risk.

3.2 What Are Not Clinical Waste

For the avoidance of doubt, the following wastes are not classified as clinical waste and waste producers should observe relevant legal requirements applicable to the handling of these wastes :

- Radioactive waste, whether arising from medical sources or not, as defined under the Radiation (Control of Radioactive Substances) Regulations (Cap. 303A);
- Chemical waste as defined under the Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C) including cytotoxic drugs;

  Note: "Cytotoxic drug" means a drug which has the capability of selectively killing cells while they are dividing. Cytotoxic drugs in bulk or of significant residual volume in containers (e.g. unused or partially used drugs in ampoules or syringes) are regarded as chemical waste and should be disposed of according to the Waste Disposal (Chemical Waste) (General) Regulation. Significant residual volume means more than 3% volume of the container filled with the drugs. Ampoules or syringes with less than 3% volume filled with cytotoxic drugs can be placed in sharps boxes and disposed of as Group 1 clinical waste. Such sharps boxes (i.e. with sharps contaminated with residual amount of cytotoxic drugs) should be disposed of by incineration and not by any other methods.

- Dead animals and animal tissues, organs and body parts arising from veterinary practices, abattoirs, pet shops, farms, wholesale and retail markets, Chinese medicine practices, or domestic sources; and
- Human corpses.

4. SEGREGATION, PACKAGING AND LABELLING OF CLINICAL WASTE

4.1 Segregation

Clinical waste should be segregated from municipal solid waste or other waste streams at the point of arising and packaged properly for on-site temporary storage in a safe and secure manner pending delivery to a collection point or licensed disposal facility. Different groups of clinical waste should be handled differently according to their packaging requirements as specified in section 4.2 of this Code.

4.2 Packaging

Containers for packaging of clinical waste should be leak-proof, impervious to moisture and strong enough to prevent tearing or bursting under normal handling to ensure that waste handlers and the public are protected from exposure to the waste. Such containers should be of one-trip type and should not be reused. The containers should be sealed off before leaving the waste producers' premises. The appropriate types of containers with specified colour-coding for different groups of clinical waste are set out in Table 1.

Groups of Clinical Waste	Type(s) of Container	Colour	Sealing
Group 1 - Used or contaminated sharps	Sharps box	YELLOW or combination of WHITE and YELLOW	Proprietary closure
Group 3 - Human and animal tissues	Heavy duty plastic bag	YELLOW	Plastic tie
Group 2 - Laboratory waste Group 4 - Infectious materials Group 5 - Dressings Group 6 - Other wastes	Heavy duty plastic bag	RED	Plastic tie

Table 1: Packaging Requirements for Different Groups of Clinical Waste.

Group 1 Waste – Used or Contaminated Sharps

All used or contaminated sharps should be put into sharps boxes. The specifications of a typical sharps box are given in Annex B. Small waste producers may use other containers as sharps boxes provided that the containers are rigid, non-fragile, puncture-resistant, shatter-proof and leak-proof.

Group 3 Waste – Human and Animal Tissues

Human and animal tissues, organs and body parts should be put into YELLOW plastic bags. Such waste if generated in small quantity may be placed together with other groups of waste in RED plastic bags provided that they would not generate nuisance such as obnoxious odour. Specifications of the plastic bags are provided in Annex B.

Other Groups of Clinical Waste

Group 2, 4, 5 and 6 clinical waste may be placed together in RED plastic bags. Properly sealed sharps boxes may also be put into RED plastic bags for disposal.

4.3 Sealing of Containers

Containers of clinical waste should not be filled above the warning line indicating between 70% and 80% of their maximum volume before sealing. The packaging and sealing should be conducted with care to ensure that no clinical waste adheres to the external surface of the containers.

Sharps containers should be properly sealed by the proprietary closure/tape. Plastic bags should be sealed by tying the neck securely to prevent spillage. The swan-neck sealing method as shown in Figure 1 is recommended.

No staple or unprotected metallic wire tie should be used for sealing or tagging of plastic bags with clinical waste, so as to prevent injury to waste handlers and damage to other bags. Metallic wire tie fully wrapped with plastic is acceptable for use in sealing plastic bags. If the clinical waste contains liquids, thermal sealing of the plastic bags is recommended to prevent spillage.

4.4 Labelling

Every container of clinical waste should bear a label as specified in Annex C. The label should be securely affixed or pre-printed on a prominent position of the container which allows the information on the label to be read easily.

5. STORAGE OF CLINICAL WASTE

Waste producers should provide suitable area for temporary storage of clinical waste on the premises from which the waste is generated. A waste producer should not remove any clinical waste from his premises to another place for storage, except to a collection point.

Storage area for clinical waste should be designed to prevent unauthorized access and to maintain proper sanitary conditions free of pests and vermin. There should be impermeable sills in the area to contain any leakage or spillage of waste. The area should be adequately ventilated and dedicated for storage of clinical waste only. An example of a small clinical waste storage cupboard is provided in Figure 2.

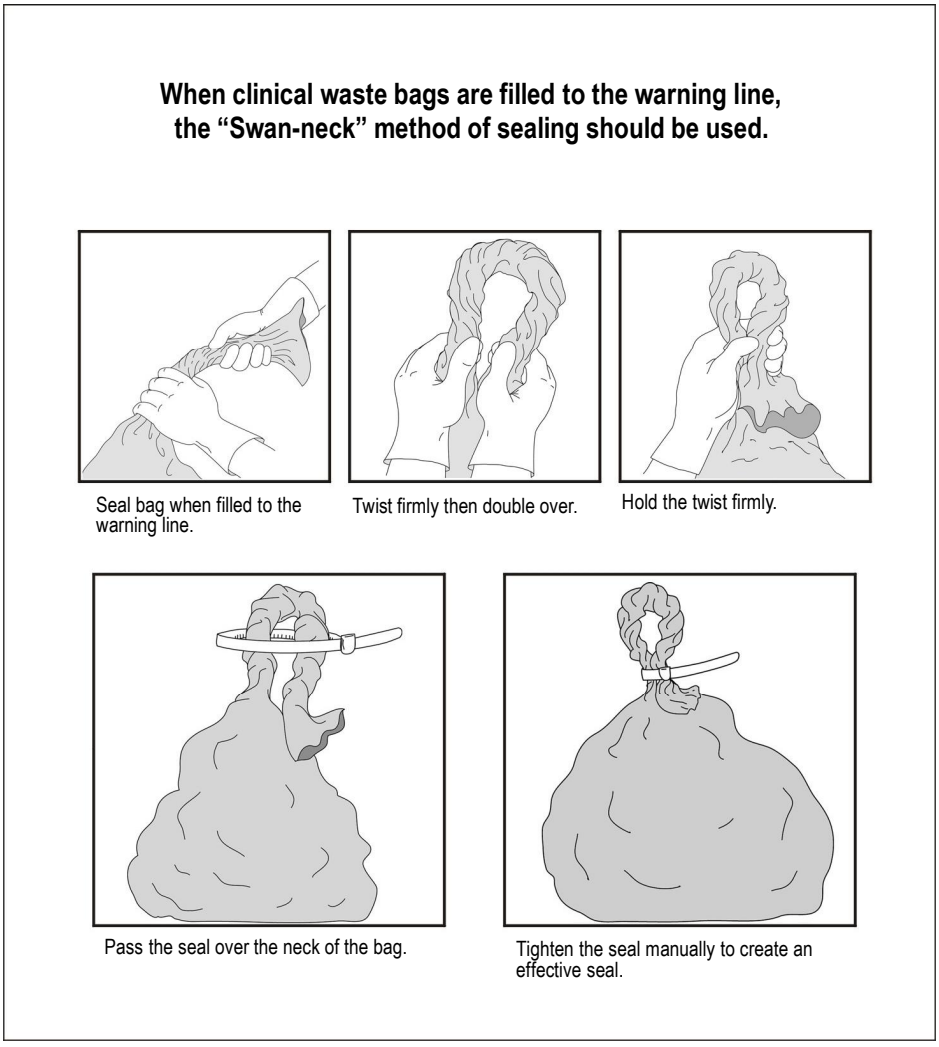

Figure 1: Sealing Method for Clinical Waste Bags.

Prolonged storage of clinical waste on the premises should be avoided. Group 3 waste (Human and Animal Tissues) should be stored under refrigeration to prevent nuisance such as obnoxious odour. Storage of such waste in a preservative agent may also be used. In such circumstances, both the waste and the preservative agent should be disposed of as chemical waste in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. Group 4 waste (Infectious Materials), if any, should be collected for disposal as soon as practicable.

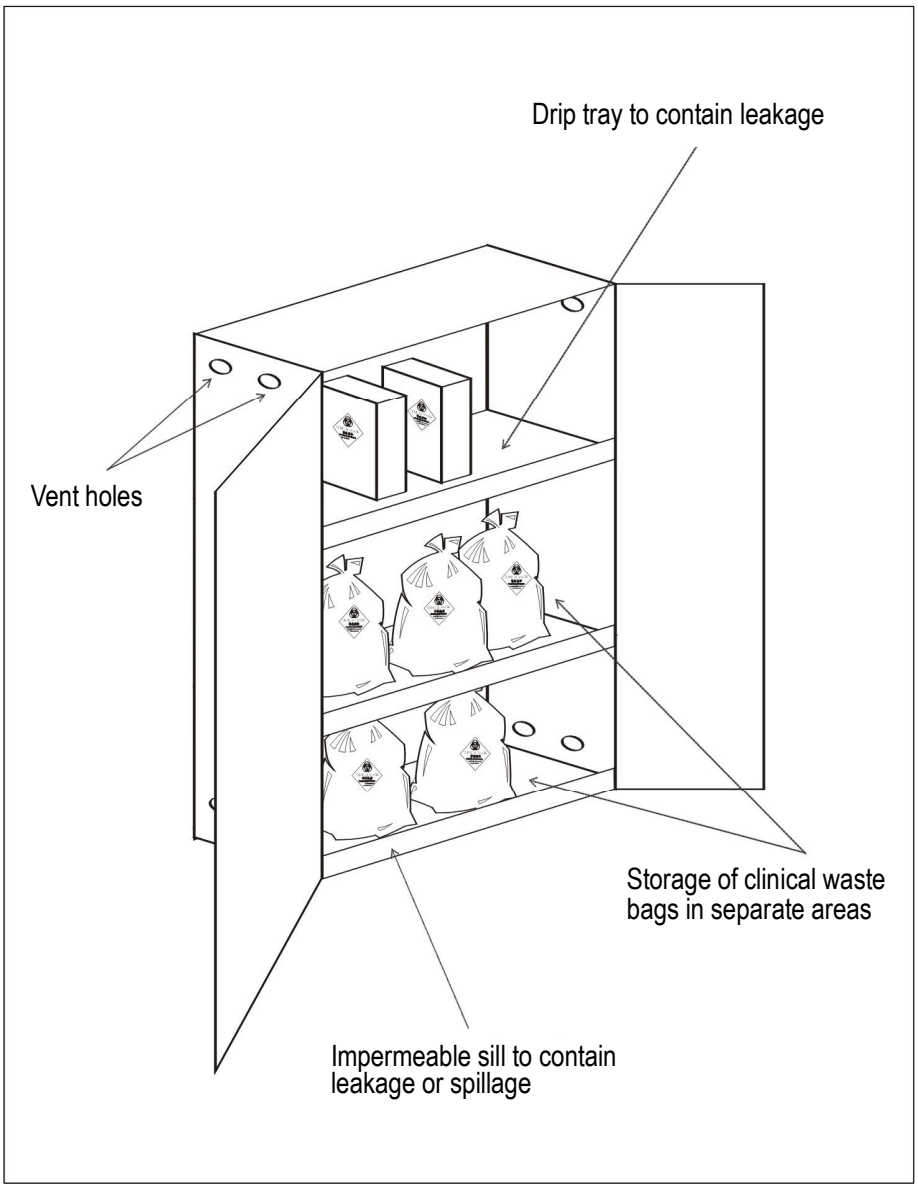

Figure 2: Schematic Drawing of a Clinical Waste Storage Cupboard.

6. COLLECTION AND TRANSPORTATION OF CLINICAL WASTE

6.1 Collection of Clinical Waste by Licensed Collectors

Clinical waste should not be collected or disposed of together with municipal solid waste or other types of wastes.

Clinical waste should be collected and transported by licensed collectors to licensed disposal facilities for proper disposal. A licensed collector is required to comply with the requirements specified in waste collection licence and in full compliance with the regulatory requirements. A list of licensed collectors is available at the homepage of the Environmental Protection Department, which will be updated from time to time.

Licensed collectors may provide services to waste producers for packaging and labelling of clinical waste, including the provision of waste containers (sharps boxes or bags). In such circumstances, the licensed collectors should properly package and label the waste in accordance with the requirements as set out in section 4 of this Code before removing the waste from the producers' premises. Waste containers provided by licensed collectors should bear the licensed collectors' names for identification of the responsible licensed collectors.

6.2 Delivery of Clinical Waste by Healthcare Professionals

Waste producers who are healthcare professionals[2] may deliver their clinical waste to a collection point or licensed disposal facility. They may ask their employees who are also healthcare professionals to deliver the waste on their behalf. A waste collection licence is not required for such delivery of clinical waste. However, the waste delivery should be subject to the requirements specified in the Regulation, which include the following :

- Å They should not carry more than 5 kg of clinical waste at any one time;
- Å No Group 4 waste should be delivered;

[2] Healthcare professionals include registered medical practitioners, dentists and veterinary surgeons, registered or listed Chinese medicine practitioners, and registered or enrolled nurses as defined in the Waste Disposal (Clinical Waste) (General) Regulation.

- Group 1 waste should be packaged in containers that are puncture-resistant, shatter-proof and leak-proof (e.g. sharps boxes);
- Other groups of clinical waste should be packaged in containers that are made of rigid material, impervious to moisture and leak-proof, and that will not rip, tear or burst under normal conditions of handling;
- The clinical waste should be properly packaged to prevent spillage, and the containers should be labelled in accordance with the specifications set out in Annex C;
- Only private car[3] within the meaning of the Road Traffic Ordinance (Cap. 374) should be used as a means of transport in delivering the clinical waste; and
- The clinical waste should be delivered directly to a collection point or licensed disposal facility within 24 hours and should not be left unattended during the delivery.

In addition, the healthcare professionals should carry adequate and appropriate first-aid equipment for use in case of injury to any person caused by the clinical waste during the delivery. They should also carry appropriate equipment for cleaning up spilled clinical waste (e.g. spare red bags and sharps boxes) in case of spillage. A recommended list of equipment for cleaning up spilled clinical waste is provided at Annex D. The healthcare professionals should exercise professional judgment in carrying adequate quantity of such equipment by reference to the amount of clinical waste they deliver.

7. COLLECTION POINT

Subject to the authorization granted by the Director, a waste producer may use his premises where he produces clinical waste (e.g. hospital, clinic, medical laboratory) to provide temporary storage area as an "on-site collection point", for receiving clinical waste generated by him in other

[3] Private car means a motor vehicle constructed or adapted for use solely for the carriage of a driver and not more than 7 passengers and their personal effects but does not include an invalid carriage, motor cycle, motor tricycle or taxi.

premises or delivered by other small waste producers.

Waste producer who intended to set up on-site collection points should obtain authorization from the Director and should follow such terms and conditions specified in the authorization, and more details can be obtained from the Environmental Protection Department. The objective is to minimize the risks of pollution to the environment and the danger to public health that might be caused by the operation of these collection points.

The delivery of clinical waste from the premises of other small waste producers to the collection point should be conducted by healthcare professionals in accordance with the requirements set out in section 6.2 of this Code. A waste producer who operates an on-site collection point should check and confirm the professional identity of the person who delivers the waste. The operator of an on-site collection point should prepare and issue a copy of the record of waste delivery to the person who delivers the waste. The operator of an on-site collection point should also keep the record and produce it to the Director for inspection upon request. The record should include the following information and as required in the authorization :

- Å The name, address and telephone number of the person who produced or caused to produce the clinical waste;
- Å The name, address and telephone number of the person who delivers the clinical waste to the collection point;
- Å The date and time of delivery of the clinical waste;
- Å The quantity of the clinical waste; and
- Å Other particulars relating to the clinical waste as may be specified by the Director in granting the authorization.

8. RECORD KEEPING

Waste producers should keep a record of the clinical waste consigned to a licensed collector or delivered to a collection point or licensed disposal facility, and should produce the record to the Director for inspection when so required. The record should include the following information :

- Å The date of consignment/delivery;
- Å The quantity of clinical waste consigned/delivered;
- Å The address of the premises from which the clinical waste is delivered;
- Å For consignment to a licensed collector, the name of the licensed collector; and
- Å For delivery to a collection point or licensed disposal facility, the name of the person who delivers the waste, and the name and address of the collection point or disposal facility.

The Director may require a waste producer to produce records of waste consignment or delivery for inspection. Such records may include copy of trip ticket or receipt of waste consignment issued by a licensed collector, or receipt of waste delivery issued by the operator of a collection point or licensed disposal facility. Waste producers should keep such records for 12 months from the date of consignment/delivery.

9. TRAINING AND SAFETY PRECAUTIONS

Waste producers should ensure that their staff receive adequate training in the safe handling of clinical waste, including cleaning-up of spillage. Staff should also be provided with suitable protective equipment to handle clinical waste (see Annex D).

Waste producers should take all such precautions as are necessary for preventing any danger to public health or safety, any pollution to the environment and any nuisance to the neighbouring area that might be caused by the clinical waste generated on their premises.

Annex A

List of Clinical Waste Producers

Major clinical waste producers:

- Public hospitals, clinics and institutions managed by the Hospital Authority;
- Private hospitals and maternity homes defined under the Hospitals, Nursing Homes and Maternity Homes Registration Ordinance (Cap. 165);
- The Prince Philip Dental Hospital; and
- Government clinics and medical laboratories (whether they are managed by the Department of Health or other Government departments).

Small clinical waste producers:

- Private medical clinics/practices;
- Private dental clinics/practices;
- Private dental, medical, veterinary or pathological laboratories;
- Private Chinese medicine clinics/practices;
- Residential care homes for the elderly;
- Universities with medical teaching or research (including Chinese medicine);
- Pharmaceutical companies with medical research;
- Private veterinary clinics/practices;
- Nursing homes;
- Health and beauty centres where medical practices are conducted; and
- Other relevant organisations.

Annex B

Specifications for Different Types of Containers for Clinical Waste

1. Sharps box

- Conform with *British Standard BS 7320:1990* in respect of resistance to penetration and resistance to leakage after vertical dropping and toppling or similar specification for sharps containers;
- Capable of being sealed;
- Provided with a handle that is not part of the closure device, wherever practicable;
- Combustible and capable of being safely incinerated, and should not be made from polyvinylchloride (PVC);
- Legibly marked with a horizontal line to indicate when the sharps box is filled to between 70% and 80% of its maximum volume, together with the words "WARNING – DO NOT FILL ABOVE THE LINE", wherever practicable;
- Coloured in yellow or combination of white and yellow; and
- Capable of being marked by indelible ink and securely attached by labels.

2. Heavy duty plastic bag

- With a maximum nominal capacity of 0.1 m^3;
- Of minimum gauge of 150 microns if made from low density polyethylene, or 75 microns if made from high density polyethylene or polypropylene, and should not be made from polyvinylchloride (PVC);
- Of suitable size and shape to fit the holder which supports the bag in use;
- Legibly marked with a horizontal line to indicate when the bag is filled to between 70% and 80% of its maximum volume, together with the words "WARNING – DO NOT FILL ABOVE THE LINE";
- Coloured in red (clinical waste other than Group 1 and 3 wastes) or yellow (for Group 3 waste); and
- Capable of being marked by indelible ink and securely attached by labels.

Annex C

Labelling of Clinical Waste Containers

Each container should bear on the outside of the container a label of such dimensions as are specified in Part 1 below, and the label should contain the symbol specified in Part 2 below.

PART 1
DIMENSIONS OF LABEL

Type of container	Dimensions of label
Sharps container of a capacity of less than 2 Litres	not less than 40 mm x 40 mm
Sharps container of a capacity of 2 Litres or more	not less than 75 mm x 75 mm
Container other than sharps container	not less than 150 mm x 150 mm

PART 2
SYMBOL IN LABEL

Specifications of the symbol:

1. The colours of the symbol should be as follows:
   Border – black
   Background – white or primary colour of the container
   Words and characters – black
   International Biohazard sign - black

2. The international biohazard sign appearing in the symbol should have a minimum height as follows:

Type of container	Minimum height
Sharps container of a capacity of less than 2 Litres	16 mm
Sharps container of a capacity of 2 Litres or more	30 mm
Container other than sharps container	60 mm

3. Each of the English words appearing in the symbol should have a minimum height as follows:

Type of container	Minimum height
Sharps container of a capacity of less than 2 Litres	3 mm
Sharps container of a capacity of 2 Litres or more	5 mm
Container other than sharps container	10 mm

4. Each of the Chinese characters appearing in the symbol should have a minimum height as follows:

Type of container	Minimum height
Sharps container of a capacity of less than 2 Litres	4 mm
Sharps container of a capacity of 2 Litres or more	7 mm
Container other than sharps container	15 mm

Annex D

Equipment for Handling Clinical Waste Spillage

1. Personal Safety and Protective Gear

- Disposable gloves
- Safety glasses or goggles
- Masks
- Eye-wash bottle
- First aid equipment (e.g. antiseptic solution for treating skin and wounds, plasters, scissors, cotton wool)

2. Equipment

- Equipment to pick up or mop up spilled clinical waste (e.g. brush, scoop, mop, dustpan, bucket)
- Absorbent material such as, paper tissues, towel, vermiculite, sawdust
- Disinfectant
- Spare heavy duty plastic bags, sharps boxes and/or rigid sealable containers (as the case may be)

Note: In case there is an injury inflicted during the handling of clinical waste, the person involved should seek medical advice and treatment or attend the emergency unit of a hospital as appropriate.