CB(1) 1323/01-02(02)

For discussion
on 20 March 2002

Legislative Council Panel on Health Services
Legislative Council Panel on Environmental Affairs

Proposed Clinical Waste Control Scheme

Purpose

This paper seeks Members' views on a revised proposal for the control of the collection and disposal of clinical waste.

Background

2. Clinical waste is waste arising from practice or research for dental, medical, nursing, veterinary, pathological/laboratory testing or pharmaceutical purposes. It includes mainly used or contaminated sharps like syringes/needles, laboratory wastes, human and animal tissues/organs, infectious materials from patients, and surgical dressings. We estimate that about eight tonnes of clinical waste are currently produced every day, largely in hospitals, clinics, and medical laboratories.

3. Clinical waste is potentially dangerous since some may carry infectious disease, and sharps like needles and scalpels may cause injury. Many private clinics and medical laboratories are located in residential and commercial establishments. Hence, waste collectors and the public may inadvertently come into contact with clinical waste. At present, the Government has no special requirement for the collection and disposal of clinical waste. Most clinical waste is disposed of in landfills without treatment.

4. To safeguard public health and safety, we introduced in 1997 a proposed Clinical Waste Control Scheme (the Control Scheme) to control the handling,

collection and disposal of clinical waste for consultation with stakeholders and the LegCo Environmental Affairs and Health Services Panels. Under this Control Scheme, it was proposed that:

(a) legislative control on major clinical waste producers (i.e. hospitals, maternity homes and Government clinics) should be the first step to tackle the issue;

(b) legislative control on small clinical waste producers (such as private medical, dental and veterinary clinics and laboratories) could be held in abeyance if these producers can demonstrate a satisfactory level of control through self-regulation; and

(c) the collected clinical waste should be disposed of at the Chemical Waste Treatment Center (CWTC) at Tsing Yi.

5. An Environmental Impact Assessment (EIA) was completed and concluded that the CWTC is suitable for treating clinical waste in an environmentally acceptable manner. The Advisory Council for the Environment (ACE) endorsed the EIA report in May 1999 (para 18 below). The LegCo Panels, in examining the disposal issue, requested the Administration to provide more information on alternative technologies for clinical waste treatment.

6. Consequently, the Environmental Protection Department (EPD) engaged Mr. William K. Townend[1], an international expert on clinical waste management, to study available treatment technologies worldwide, review international practices, and advise on the application of such technologies in Hong Kong. At the same time, in view of increasing public concern over the potential risks associated with improper handling of clinical waste, we also reviewed the proposed two-phase approach regarding the control of clinical waste collection.

[1] Mr Townend was the former President of the Institute of Waste Management in the United Kingdom and Chairman of the Working Group on Health Care Waste of the International Solid Waste Association. He is the co-author of the WHO publication "Teacher's Guide: Management of Wastes from Health-care Activities".

Revised Proposal for Handling and Collection of Clinical Waste

7. We completed the review on clinical waste collection in 2001. To better safeguard public health and safety, we propose to adopt a more robust collection system which would extend legal control to all major and small clinical waste producers simultaneously, requiring them to segregate properly clinical waste from other wastes, and arrange for proper disposal of the waste.

The Revised Control Scheme

8. The revised Control Scheme comprises the following key elements:

(a) establishing a statutory licensing framework to regulate the handling of clinical waste by collectors and disposal facility operator(s);

(b) requiring clinical waste producers to consign their waste to licensed clinical waste collectors. Alternatively, healthcare professionals should deliver not more than 5 kilograms of clinical waste to the disposal facility or authorized collection points set up by waste collectors or individual waste producers;

(c) issuing two codes of practice - one for waste collectors and major clinical waste producers, and one for small waste producers - to provide guidance on segregation, packaging, labelling, collection, handling, storage, transportation and disposal of clinical waste;

(d) putting in place a trip ticket system to track the movement of clinical waste from its source to the disposal facility; and

(e) requiring clinical waste producers to pay a charge to cover part of the waste disposal cost.

Consultation with Relevant Sectors

9. In November 2001, we issued a Consultation Document on the revised Control Scheme together with a draft "Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers" (Annex A) for consultation with stakeholders, including the medical, Chinese medical, dental, nursing and veterinary sectors, elderly homes, green groups, academic institutions, waste collectors and other related organizations. We also attended eight meetings or discussion forums[2] to explain the revised Control Scheme to the parties concerned and to collect their views.

10. We received 27 written submissions at the end of the consultation period. The submissions show general support for the revised Control Scheme. A summary of the comments received and our response to the comments is at Annex B. Major issues raised in the written submissions and in meetings with the relevant trades include:

(a) Level of collection charges

Some small waste producers are concerned about the level of collection charges to be levied by waste collectors and suggested that Government should subsidize the cost, or regulate future fee increases. At present, there are already nine collectors providing collection service[3]. We believe this number should allow sufficient competition in a free market and help ensure that the collection cost is kept at a reasonable level. In addition, we have included in the revised Control Scheme some flexibility that allows small waste producers to deliver their clinical waste to authorised collection points or to the disposal facility if they do not wish to hire collectors (para. 8(b) above).

(b) Disposal cost at the waste disposal facility

There are concerns over the proposal to charge waste producers the waste disposal cost, and how future increases would be controlled. Some respondents suggested that such a fee should be waived. We do not agree with this view. We consider that the User Pays Principle should apply and

there is no reason for taxpayers to bear the disposal cost for waste producers. We estimate that a small clinic producing 0.4 kg of clinical waste a day would pay less than $35 for disposal each month. Moreover, we believe the disposal cost would help create an economic incentive for waste reduction and proper segregation by clinical waste producers.

(c) Establishing collection points

Some respondents suggested Government set up collection points at Government clinics or public hospitals to serve the small waste producers. As there are already a number of clinical waste collectors in the market, we do not think Government should provide this service. Furthermore, the public should not bear the collection cost nor should Government compete with private waste collectors.

11. There is no change to the control on major waste producers. A copy of the draft Code of Practice applicable to them is at Annex C.

Treatment of Clinical Waste

12. Mr. Townend has already completed the review of treatment technologies. The study report, together with reviews carried out by the Hospital Authority and relevant information gathered by EPD, is at Annex D.

Findings of the Review

13. The review has examined the following technologies for the treatment of clinical waste:

(a) chemical disinfection;

(b) thermal disinfection – wet thermal treatment (autoclave), dry thermal treatment (hot screw-feed technology) and electromagnetic wave treatment (microwave & radio wave);

(c) thermal treatment – incineration, pyrolysis and gasification which operate on a similar principle but use different levels of oxygen in the process; and

(d) novel treatment technologies – plasma based systems and irradiation.

14. In comparing the various treatment technologies, the review has taken into account their health, safety and environmental impacts, efficacies in killing infectious microorganisms, reliability and ease of maintenance, weight and volume reduction of waste, handling of residues and further treatment requirements, space requirements, public perception of risk, as well as their costs and financial implications. In brief, the findings are as follows:

(a) <u>Chemical Disinfection</u>

- Chemical disinfection involves the addition of chemicals to the clinical waste to kill or inactivate the pathogens. Pre-treatment shredding of the waste is required to ensure maximum contact of the chemical with the waste.

- This is a relatively economical means to treat clinical waste.

- However, it introduces an additional chemical burden on the environment. The use of chemicals and the operation of the pre-treatment shredder may pose occupational safety hazards to workers who operate the system. It cannot destroy the residual hazardous chemicals in the clinical waste. It is also not suitable for treating cytotoxic drugs, human tissue and body parts, pharmaceuticals and chemicals.

(b) <u>Autoclaving</u>

- Autoclaving is a wet thermal treatment process that involves the use of steam to sterilize the waste at 121° C-131° C. Pre-treatment shredding of the waste is normally required, or else there could be cold spots where the steam could not reach. The

steamed waste is then incinerated or landfilled.

- It is a relatively cheap treatment method and may be operated in hospitals.

- However, vapour will be formed during the process, and residual chemicals in the waste that cannot be destroyed under low temperature would be vaporized and escape into the environment. The emissions, the presence of cold spots and the need for shredding all pose occupational safety hazards to workers who operate the system. It is not suitable for treating cytotoxic drugs, human tissue and body parts, pharmaceuticals and chemicals.

(c) Screw-feeding

- This is a dry thermal treatment process where the waste is heated by a rotating auger to 100° C-131° C. Pre-treatment shredding is required. The residues are then incinerated or landfilled.

- It has the same drawback and inadequacies as autoclaves. Similar to autoclaving, the need for shredding poses occupational safety hazards to workers who operate the system. It is not suitable for treating cytotoxic drugs, human tissue and body parts, pharmaceuticals and chemicals.

(d) Microwaving & Radiowaving

- This is an electromagnetic wave thermal disinfection process that involves the use of high-intensity radiation to heat the moisture inside the waste. The treated waste is then incinerated or landfilled. Pre-treatment shredding is required.

- Both maintenance of the shredder and the exposure to high intensity electromagnetic wave radiation may pose occupational safety hazards to workers who operate the system. Moreover, similar to autoclaving, vapour will be formed during the process,

and residual chemicals in the clinical waste that cannot be destroyed under low temperature would be vaporized and escape into the environment. Again, it is not suitable for treating cytotoxic drugs, human tissue and body parts, pharmaceuticals and chemicals.

(e) Incineration

- This involves burning of waste at over 1200° C.

- The process can destroy all types of infectious microorganisms, sharps, cytotoxic drugs, chemicals and toxic volatile compounds. Residual hazardous chemicals in the waste can be destroyed and waste can also be made unrecognizable. The volume and weight of waste can be reduced by over 80% without shredding, and the residual ashes can be disposed of in landfills.

- Pollutants like dioxins will be generated and pollution control devices are required. Both fly ash and bottom ash will be generated. They need to be stabilized and disposed of at landfills.

(f) Pyrolysis

- Pyrolysis is the process of chemical decomposition of organic materials by heat (up to 2500° C) in the absence of oxygen.

- The process can significantly reduce the volume and weight of clinical waste and can destroy all infectious micro-organisms and residual amount of cytotoxic drugs, pharmaceuticals and toxic chemicals effectively.

- Similar to incineration, there may be dioxin emission and pollution control devices are required. There is currently only one clinical waste pyrolysis plant in Europe, and it also has an “after-burn” unit i.e. a post-pyrolytic treatment incinerator.

(g) Gasification

- Gasification is a process where the materials (that have a high carbon content) are heated to about 1300° C with a limited amount of oxygen.

- Similar to incineration and pyrolysis, this technology can destroy all micro-organisms, cytotoxic drugs, pharmaceuticals and toxic chemicals effectively. Waste volume and weight can also be significantly reduced.

- Similar to incineration and pyrolysis, there may be dioxin emission and pollution control devices are required. Again, most gasification plants consist of after-burn units to incinerate the residual waste.

(h) Plasma-based Systems & Irradiation

- Plasma-based systems use high temperature (as high as 10,000° C) ionised gas to convert waste to a vitrified substance with separation of molten metal. Irradiation is the use of electron beam or other high energy particles emitted from radioisotopes to disinfect waste.

- Both technologies may kill all microorganisms and make clinical waste unrecognizable. Plasma systems can also significantly reduce the volume and weight of clinical waste.

- However, these are relatively new technologies and there is insufficient information for us to assess the cost and the long-term environmental impacts. They also have a limited proven track record to demonstrate their operational reliability. In cases where the use of radioisotopes is involved, radioactive waste may be generated.

Recommendation on Treatment Technology

15. The review has concluded that technologies described in para 14(a)-(d) are not satisfactory as they cannot properly handle all kinds of clinical waste. These technologies require post-treatment landfilling or incineration and are thus not a total solution in handling clinical waste. Most of them also emit pollutants because they cannot treat the residual chemicals in the waste. Occupational hazards remain a primary concern as there are already cases elsewhere where workers who operate these treatment facilities contract infectious disease. Plasma-based systems and irradiation (para 14(h)) do not pose such problems but they are relatively new and their operational reliability and environmental impacts have yet to be fully established.

16. As for gasification and pyrolysis (para 14(f) & (g)), Mr Townend is of the view that they do not have specific advantages over incineration, as they do have the same emission problems as incineration. These are new technologies, and there are only a few gasification/pyrolysis plants in operation overseas. Furthermore, incineration is still needed as part of the treatment process. Given that the CWTC is already an existing facility, using incineration to treat clinical waste would obviate the need to build a new facility. Incineration has been developed for many decades and its impacts have been widely studied. With advancement in incineration and pollution control technologies, its environmental impacts including emission of dioxins can be tackled effectively. It remains the most commonly adopted method in treating clinical waste in most advanced economies including the Mainland, the US, Europe, Canada, Australia and Japan.

17. The review recommends that as a medium-term solution, the CWTC, which still has spare capacity, be modified for treating clinical waste. The review suggests that, in the longer term, the Government should keep abreast of international developments and should not preclude the option of installing an alternative treatment facility at a later stage.

Proposed Way Forward

18. Having taken into account the review findings, we consider that we should proceed with the planned modification of the CWTC to treat clinical waste. As mentioned in para 5 above, an EIA on the proposed use of the CWTC for this purpose had been completed in 1999. The findings confirmed that the CWTC, which is a purpose-built waste treatment facility with suitable pollution control devices, is suitable to treat clinical waste in an environmentally acceptable manner. A very tight emission monitoring programme has also been put in place since the CWTC's commissioning. ACE endorsed the EIA study in May 1999 with conditions[4]. All findings and recommendations of the EIA report will be adopted, and the conditions set down by ACE will be met.

Legislative and Implementation Timetable

19. We plan to submit the Waste Disposal (Amendment) Bill and the draft Waste Disposal (Clinical Waste) (General) Regulation to this Council in June. Subject to the enactment of the Bill and the Regulation, we will implement the revised Control Scheme in 2004.

Resource Implications

20. Subject to Members' endorsement, we will seek funding approval from the Public Works Sub-committee and the Finance Committee within this year for the modification of CWTC to treat clinical waste. The capital cost of the modification work is estimated to be $51 million at September 2001 prices. The work is expected to be completed in 2004. The annual recurrent cost for treating clinical waste is estimated to be around $22 million.

21. We intend to recover part of the recurrent cost from clinical waste producers through disposal charges. We propose that the charging mechanism follow that of land-based chemical waste treatment at the CWTC, i.e. we will recover 31%

of the variable operating cost as a start, gradually raising it to full recovery of the variable operating cost. The capital and fixed operating cost will not be charged. At present, the variable operating cost for the CWTC to treat clinical waste is estimated to be $7.7 per kg. This means a charge of less than $3 per kg, or less than $35 each month for an average clinic that produces 0.4 kg of clinical waste each day (para 10(b)).

Advice Sought

22. Members are invited to comment on the revised Clinical Waste Control Scheme as set out in this paper.

Environment and Food Bureau
Environmental Protection Department
March 2002

Annex A

PROPOSED CLINICAL WASTE CONTROL SCHEME

CONSULTATION DOCUMENT

1. BACKGROUND

1.1 Clinical waste, arising principally from hospitals and clinics, is potentially dangerous since it can spread disease because of the infectious nature of some wastes, and/or cause injury through the presence of sharps such as needles and scalpels. To safeguard the health and safety of the public against the risk posed by clinical waste, the Government consulted the medical, dental, pharmaceutical and veterinary sectors, tertiary and research institutions and other related organizations in October 1997 on a proposal to implement a Clinical Waste Control Scheme ("the control scheme"). The control scheme would be supported by legislation and a code of practice for the proper management of clinical waste.

1.2 In the last consultation document, we proposed to implement the control scheme in two phases. The focus of the first phase would be major producers (including hospitals, maternity homes and government clinics), collectors and disposal operators of clinical waste, while other small clinical waste producers which produced small quantities of clinical waste (such as private medical, dental and veterinary clinics) would be controlled under the second phase. It was proposed that if small clinical waste producers could demonstrate that they have established a satisfactory level of control by means of self-regulation, implementation of the second phase might be held in abeyance.

1.3 Over the past four years, there has been increasing public concern about the potential risk associated with improper handling of clinical waste. In view of this rising concern, the Government has revisited the issue and considers that a more definite timetable to control clinical waste disposal by small clinical waste producers should be put in place. Moreover, with the anticipated completion of registration of Chinese medicine practitioners in end-2001, the Government proposes to include Chinese medicine clinics/practitioners under the control scheme. Necessary amendments have been made to the control scheme to reflect the above changes.

2. REVISED PROPOSAL ON THE CLINICAL WASTE CONTROL SCHEME

2.1 The revised control scheme is essentially the same as the original one, except that it provides for a definite timetable for extending legal requirements to small clinical waste producers, instead of relying on a self-regulatory approach as originally proposed in 1997.

2.2 Under the revised control scheme, clinical waste collectors and disposal facility operators are required to obtain a licence from the Director of Environmental Protection and comply with the licence conditions. Clinical waste producers will be legally required to arrange for the disposal of their clinical waste at a licensed clinical waste disposal facility.

2.3 Clinical waste producers are deemed to have discharged their duties of proper disposal of clinical waste if they have consigned their waste to a licensed clinical waste collector. Alternatively they may also dispose of the waste at a licensed on-site or in-house disposal facility. In addition, both the waste producers and licensed collectors should conduct their operations in accordance with the relevant Code of Practice.

2.4 As major and small clinical waste producers have different modes of operation, we will issue two Codes of Practice – "Code of Practice for the Management of Clinical Waste for Waste Collectors and Major Clinical Waste Producers" and "Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers". The codes will cover segregation, packaging, labelling, collection, handling, storage, transport and disposal of clinical waste. Compliance with the codes is not a legal requirement, but demonstration of compliance could be used as evidence of good practice in the course of defence. The list of major and small clinical waste producers is at Annex I. A draft "Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers" (the Code) is at Annex II.

2.5 A trip ticket system will be put in place. The trip ticket is a record for each consignment of waste and is designed to track the movement of waste from the source of waste generation to the licensed disposal facility. The licensed clinical waste collectors will be responsible for including the particulars of the wastes handed over by the clinical waste producers in the trip ticket, and shall keep a copy of the trip ticket for inspection by the Director of Environmental Protection. The collector shall also give a copy of the trip ticket to the waste producers. It would not be an offence in law if the waste producers do not keep a copy of the trip ticket. However, they are recommended to do so for record purpose so that they can produce the trip ticket for inspection by the Director of Environmental Protection and demonstrate that they have made proper disposal arrangement.

3. WASTE COLLECTION

3.1 At present, clinical waste collectors have to obtain a permit from the Environmental Protection Department for disposal of clinical waste at the landfills. The permit system will be replaced by licensing control when the control scheme is implemented.

3.2 Initial feedback from existing waste collectors indicates that the cost of collection of clinical waste from a small private clinic by the private waste collectors would likely range from $30 to $300 per month, depending on the location of the clinic.

3.3 To facilitate small producers who prefer to carry small quantity of clinical waste to the licensed disposal facility, healthcare professionals including registered doctors, dentists, veterinary surgeons, registered and listed Chinese medicine practitioners, registered and enrolled nurses will be allowed to transport not more than 5 kg of clinical waste (except Group 4 clinical waste under Code of Practice Section 3.1) to a licensed disposal facility by themselves without the need to obtain a collection licence provided that they do not use motor cycle, public bus, public light bus, train, Mass Transit Railway, light rail vehicle, peak tram, bicycle or tram, and that they use proper containers and pack and label the clinical waste according to the requirements in the Code of Practice.

3.4 Small producers may also consider delivering their clinical waste to authorized collection points, if available, by healthcare professionals. Collection points could be set up by licensed clinical waste collectors or provided by other clinical waste producers e.g. private hospitals and private medical laboratories at their premises. The collection and transport of clinical waste from the premises of a small producer to an authorized collection point by healthcare professionals shall follow the conditions set out above in Section 3.3.

4. DISPOSAL FACILITY

4.1 At present, clinical waste is mainly disposed of at landfills. Government plans to provide a long term disposal facility for clinical waste, and is now reviewing different available technologies. Before a long term facility is available, landfills would continue to be the disposal facility for clinical waste.

4.2 We estimate that the disposal cost is likely to be $3 per kg. Hence, for a doctor that produces an average of 0.4 kg of clinical waste each day, the disposal cost would be $1-2 per day.

5. LEGISLATIVE MEASURES

5.1 At present, there is no comprehensive legislative control system for the management and disposal of clinical waste in Hong Kong. To give legal standing to the control scheme and to enable its implementation, amendments will be made to the Waste Disposal Ordinance to define clinical waste, to introduce licensing control on clinical waste collectors and disposal site operators, to

enable new regulations setting out the legal requirements to be followed by the clinical waste producers, collectors, and disposal site operators, and to provide for the charging of the disposal of clinical waste at the licensed disposal facility.

6. IMPLEMENTATION

6.1 The licensing control on waste collectors and disposal facility operators is proposed to be implemented in early 2004. Legislative control will be extended to all clinical waste producers, major or small, in mid 2004.

7. CONSULTATION

7.1 Government welcomes your comments on the proposed Clinical Waste Control Scheme. We will consider all responses to the proposal before deciding on the way forward.

7.2 Comments and enquiries on this Consultation Document may be sent in writing to the following by post, fax or e-mail before 31 December 2001:

Waste Policy and Services Group
Environmental Protection Department
28/F, Southorn Centre
130 Hennessy Road
Wan Chai
Hong Kong
Fax: 2318 1877
Email: cwcs@epd.gov.hk

7.3 Please note that the Government would wish, either in discussion with others or in any subsequent report, whether privately or publicly, to be able to refer to and attribute comments submitted in response to this Consultation Document. Any request to treat all or part of a response in confidence will be respected, but if no such request is made, it will be assumed that the response is not intended to be confidential.

Environment and Food Bureau and
Environmental Protection Department
Hong Kong Special Administrative Region Government
November 2001

Annex I

LIST OF CLINICAL WASTE PRODUCERS

Small clinical waste producers:

- Private medical clinics/practices;
- Private dental clinics/practices;
- Private medical laboratories;
- Private Chinese medical/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; and
- Other relevant organisations.

Major clinical waste producers:

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

Note: Major clinical waste producers should follow the Code of Practice for the Management of Clinical Waste for Waste Collectors and Major Clinical Waste Producers.

Annex II

DRAFT CODE OF PRACTICE FOR THE MANAGEMENT OF CLINICAL WASTE FOR SMALL CLINICAL WASTE PRODUCERS

Environmental Protection Department
The Hong Kong Special Administrative Region Government
Nov 2001

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Clinical waste is potentially dangerous because it can spread diseases due to the infectious nature of some waste, or because it can cause injury through the presence of sharps such as needles. In addition, clinical waste may be offensive in nature. It is therefore important to pay special care in the handling, packaging, storage, and transportation of clinical waste in order to minimise any potential danger to health or pollution to the environment and to ensure that clinical waste is properly disposed of at a licensed disposal facility.

1.2 Clinical waste arises from a number of sources, including hospitals and clinics, medical and dental surgeries, veterinary practices, medical teaching establishments, medical and research laboratories. All clinical waste producers have the responsibility to ensure proper handling and disposal of clinical wastes to protect themselves and others from injuries and disease transmission.

1.3 This Code of Practice is designed to provide guidance to the small clinical waste producers and 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"). This Code is a statutory document published under Section 35 of the Waste Disposal Ordinance by the Secretary for the Environment and Food in consultation with the Advisory Council on the Environment. Compliance with this Code of Practice is not a legal requirement, but demonstration of compliance could be used as evidence of good practice in the course of defence.

1.4 In addition to this Code, the booklet - *A Guide to the Clinical Waste Control Scheme* published by the Environmental Protection Department (EPD) explains the relevant legislative provisions.

2. THE DUTY OF CARE OF CLINICAL WASTE PRODUCERS

2.1 Clinical waste producers have a duty of care to take the following measures in managing clinical waste within the premises where the waste is generated:

- to segregate clinical waste from other waste types and to prevent clinical

waste from entering the disposal chain of general refuse;

- to properly package and label the clinical waste enabling easy identification, including information on the source of generation;
- to provide safe and secure temporary storage facility for clinical waste;
- to ensure the staff to take all necessary safety measures in handling clinical waste and to provide sufficient training to them; and
- to keep records of the quantities of clinical waste collected by waste collectors or delivered to an authorised collection point or a licensed disposal facility, and to produce such records for inspection upon request by the Director of Environmental Protection.

2.2 In addition to the duty of care responsibility, the Regulation requires all clinical waste producers to arrange their clinical waste to be delivered to a licensed facility for disposal. Waste producers are deemed to have discharged their duties of proper disposal of clinical waste if they consign the waste to a licensed clinical waste collector. Waste producers who fail to arrange their clinical waste to be delivered to a licensed disposal facility for disposal would commit an offence under the Regulation.

3. DEFINITION OF CLINICAL WASTE

3.1 Types of Clinical Waste

Clinical waste is defined as any waste arising from:

- any dental, medical, nursing or veterinary practice, or any other practice or establishment providing medical care and services for the sick, injured, infirm or those who require medical treatment;
- any dental, medical, nursing, veterinary, pathological or pharmaceutical research; or
- any 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, cartridges, ampoules and other sharp instruments

which have been used or which have become contaminated with any other group of clinical waste.

Group 2 - Laboratory Waste

Unsterilised laboratory stocks, cultures of infectious agents and potentially infectious waste with significant health risk from dental, medical, veterinary or pathology laboratories**.**

Group 3 - Human and Animal Tissues

All human tissues and animal tissues, organs and body parts as well as dead animals, but excluding dead animals, animal tissues, organs and body parts arising from veterinary sources or practices.

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

Group 4 – Infectious Materials

Infectious materials from patients with the following pathogens: Crimean/Congo haemorrhagic fever, Ebola, Guanarito, Hendra, Herpesvirus simiae (B virus), Junin, Kyasanur forest disease, Lassa fever, Machupo, Marburg, Omsk, Russian spring-summer encephalitis, Sabia and Variola viruses. Materials contaminated by this group of waste are also classified as Group 4 waste.

Note: The Director of Environmental Protection 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

Other wastes which are likely to be contaminated with:

- infectious materials (other than infectious materials referred to in Group 4); or
- any clinical waste being substance, matter or thing belonging to Group 1, 2, 3 or 5,

and which may pose a significant health risk.

Note: Apart from the Director of Environmental Protection, healthcare professionals may also assess whether Groups 2 and 6 clinical waste is posing 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 are not subject to the requirements of the Regulation:

- clinical-type waste arising from domestic premises;

- radioactive waste, whether arising from medical sources or not, as defined under the Radiation (Control of Radioactive Substances) Regulations (Cap. 303 - sub. leg.);

- chemical waste as defined under the Waste Disposal Ordinance (Cap. 354) 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 significant residual volume in container (e.g. unused or partially used drugs in ampoules or syringes) are regarded as chemical waste and should be disposed according to the Waste Disposal (Chemical Waste)(General) Regulation. Significant residual volume means more than 3% volume of the container holding the cytotoxic drugs. Ampoules or syringes holding less than 3% volume of cytotoxic drugs in containers can be placed in sharps boxes and disposed as Group 1 clinical waste. Such sharps boxes (i.e. with sharps contaminated with residual amount of cytotoxic drugs) must be incinerated and must not be disposed of by other methods.

- dead animals, animal tissues, organs and body parts arising from veterinary sources/practices, abattoirs, pet shops, farms, wholesale and retail markets, or domestic sources;

- dead human bodies.

4. SEGREGATION, PACKAGING AND LABELLING OF CLINICAL WASTE

4.1 Segregation

Clinical wastes should be segregated from municipal waste or other waste types at the point of arising and packaged properly for on-site temporary storage in a safe and secure manner pending transportation to final disposal.

4.2 Packaging

Packaging must be leak resistant to ensure that wastes handlers and the public will be protected from exposure to the wastes.

Group 1 Waste - Sharps

All sharps must be put into sharps boxes. The specifications of a typical sharps box are shown in Annex A. Small clinical waste producers may use other containers provided that the containers are rigid, non-fragile, puncture resistant, waterproof and leak proof. The containers should also be sealed off during transportation. Glass bottles are not acceptable for use as sharps containers since they can be broken easily during transportation. Sharps boxes should not be filled to over 75% of their capacity and should be sealed to prevent spillage of the contents.

Group 3 Waste – Human and Animal Tissues

Human and animal tissues and organs should be disposed of in Yellow Bags labelled with the biohazard sign. Small quantities of this group of waste may be placed in Red Bags labelled with the biohazard sign provided that they would not generate nuisance such as noxious odour. Specifications of Yellow Bag and Red Bag are listed in Annex A.

Other Groups of Clinical Waste

Other groups of clinical wastes should be disposed of in Red Bags labelled with the biohazard sign. Properly sealed sharps box may also be disposed of in Red Bags.

4.3 Sealing of packaging

All bags should be sealed by tying the neck securely to prevent leakage of clinical waste. If the clinical waste is of high fluid content, thermal sealing of the bag is recommended to prevent spillage. No bags should be filled to over 75% of their capacity before sealing. No clinical waste should adhere to the external surface of the containers. Staples must not be used as they may cause injury to the handler and damage to the adjacent bags.

4.4 Labelling of wastes

Clinical waste containers (sharps boxes or bags) should be labelled with the universal biohazard sign (Annex A). Each container should be marked or a label should be attached or tagged to the container showing the origin of the waste. Labelling of wastes can be done by either the clinical waste producer or licensed clinical waste collector when providing service at the producer's premises.

5. STORAGE OF CLINICAL WASTE

5.1 Storage area should be designed to prevent unauthorized access and to maintain proper sanitary conditions free of pests and vermin. Prolonged storage of clinical waste within the premises is not recommended and storage should be no longer than 3 months. Clinical waste which may be infectious is recommended to be refrigerated and should be collected more frequently.

5.2 Human and animal tissue wastes should be kept frozen to prevent nuisance such as noxious odour. Clinical waste producers should assess the quantity and nature of waste generated and ensure that large quantity of tissue waste is collected more frequently. Storage of such waste in a preservative agent may also be used. However, disposal of the preservative agent should follow the Waste Disposal (Chemical Waste) (General) Regulation.

6. COLLECTION AND TRANSPORTATION OF CLINICAL WASTE

6.1 Clinical waste must not be collected and disposed of with the municipal waste.

6.2 Clinical waste should be transported to licensed clinical waste disposal facilities by licensed collectors with adequate knowledge and training on the management of clinical waste. A clinical waste collector has to comply with the regulatory requirements and licence conditions.

6.3 Clinical waste collectors may provide services to clinical waste producers, including the provision of containers (sharps boxes or bags) and packaging, and labelling of clinical waste at the producer's premises. The containers provided by the collectors have to show the identity of the collectors. The clinical waste must be properly packaged and labelled in accordance with conditions set out in Section 4 before the waste leaves the producer's premises.

6.4 Healthcare professionals (including registered medical practitioners, dentists, veterinary surgeons, registered or listed Chinese medicine practitioners, and registered or enrolled nurses) may transport their clinical waste to an authorized collection point or a licensed disposal facility themselves. Under these circumstances, they are not required to comply with the licensing and the trip ticket requirements for clinical waste collection under the Waste Disposal Ordinance. However, they are subject to the following conditions:

- Carry not more than 5 kg of clinical waste at any one time;
- Do not use any public bus, public light bus, Mass Transit Railway, train, light rail vehicle, Peak Tram, tram, motor cycle, bicycle; and
- Do not carry any Group 4 waste.

6.5 If healthcare professionals choose to transport their own waste to a licenced disposal facility, they should properly pack and label the clinical waste before leaving their premises. The containers must meet the specifications and bear the biohazard sign in Annex A. They should also carry appropriate first-aid and spillage kits (e.g. spare red bags and sharps box) for handling spillage. They should also observe the requirements in section 7.1 and 8.3 below.

7. AUTHORIZED COLLECTION POINT

7.1 Individual clinical waste collectors and producers (e.g. private hospitals, private clinics, private medical laboratories) may provide temporary storage facilities as "collection points" for small clinical waste producers. They have to issue a receipt to those small waste producers who deliver clinical waste to their collection points.

7.2 The setting up of collection points must be authorized by the Director of Environmental Protection and be subject to such conditions that the Director may stipulate. The objective is to minimize risks to the environment and to public health.

7.3 The collection and transport of clinical waste from the premises of a small producer to an authorized collection point by healthcare professionals shall follow the conditions set out in Section 6.

8. RECORD KEEPING

8.1 The collection licence will require licensed clinical waste collectors to fill in a trip ticket showing the name, location and other details of the clinical waste producers for each consignment of clinical waste from the producers. Waste collectors have to provide a copy of the trip ticket to the waste producers for record.

8.2 All clinical waste producers have to produce documents for inspection by the Director of Environmental Protection to demonstrate that they have consigned their clinical waste to the licensed collectors and the trip ticket for tracking the waste movement could serve as documentary evidence. All clinical waste producers are recommended to retain a copy of the trip ticket for 12 months after the date of collection.

8.3 Healthcare professionals who are not required to comply with the licensing and trip ticket requirements for clinical waste collection (Section 6.4 and 7.3) should keep records of their clinical waste disposal and retain the receipt from authorized collection points or the licenced disposal facility for a period of 12

months for inspection upon request by the Director of Environmental Protection.

9. TRAINING AND SAFETY PRECAUTIONS

9.1 Small waste producers should ensure that their staff receive adequate training in the safe handling of clinical waste. They should also be provided with suitable protective equipment (e.g. disposable gloves) to handle clinical waste if necessary.

10 ENQUIRIES

10.1 Any enquiries concerning this Code of Practice or the Regulation may be addressed to: Waste Policy & Services Group, Environmental Protection Department, 28th Floor, Southorn Centre, 130 Hennessy Road, Wan Chai, Hong Kong. (Fax: 2318 1877)

Annex A

Specifications for Different Types of Containers and Label for Clinical Waste

(1) Sharps box

- conforms with British Standard BS 7320 (1990) or similar specification for sharps containers intended to hold potentially infectious clinical waste;
- capable of being sealed;
- provided with a handle that is not part of the closure device;
- proof against spillage of its contents;
- proof against puncture by clinical waste materials, such as broken glass or syringes;
- capable of withstanding one-metre vertical drop to a concrete floor without fracture, puncture or loss of contents;
- legibly marked with a horizontal line to indicate when the sharps box is filled to between 70% to 80% of its maximum volume;
- coloured in yellow or combination of white and yellow; and
- capable of being marked by indelible ink and securely attached by labels.

(2) Plastic bag (Red Bags and Yellow Bags)

- with a maximum nominal capacity of 0.1 m^3;
- of minimum gauge of 150 microns if low density polyethylene, or 75 microns if high density polyethylene or polypropylene;
- of suitable size and shape to fit the carrier which will support the bag in use;
- coloured in red (clinical waste other than Group 3) or yellow (for Group 3 waste); and
- capable of being marked by indelible ink and securely attached by labels.

(3) Label for clinical waste (Biohazard Sign)

- Colours: Border - Black
  Background - White or primary colour (red/yellow) of the container
  Character and Letters - Black

- Size (for plastic bag): Biohazard sign - Height (minimum) 6 cm
  Chinese characters - Height (minimum) 1.5 cm
  English Letters - Height (minimum) 1 cm
  Label - 12 cm x 12 cm (minimum)

- Size (for sharps box): Biohazard sign - Height (minimum) 3 cm
  Chinese characters - Height (minimum) 0.7 cm
  English Letters - Height (minimum) 0.5 cm
  Label - 6 cm x 6 cm (minimum)

Annex B

Response-to-Comment on the Consultation Document for the Proposed Clinical Waste Control Scheme

I. From Professional Bodies/Organizations

Respondent	Respondent's Comment (Extracts)	Government's Response
The Hong Kong Medical Association	Our members are in general agreement with the proposed scheme. However, they are still concerned about the cost implication of the ultimate waste disposal, be it by way of incineration or landfill. They are of the view that such costs should not be borne by the users. Another concern is raised by members practicing in outlying areas, where it is difficult to find collection service at reasonable price. These members may have to carry the clinical waste themselves to the disposal facility. It will be much appreciated if your Department could arrange with institutions, e.g. public hospitals and clinics, for these members to deliver their waste to their clinical waste collection points.	➢ We do not support provision of subsidies for waste producers. Taxpayers should not bear the cost for handling waste generated by waste producers. The users pay principle should apply. ➢ Considering the small volume of clinical waste a typical clinic generates each day, we believe the current estimate of disposal cost at $3/kg should not add undue burden to the profession. ➢ The proposed Control Scheme has allowed sufficient flexibility for clinical waste producers in regard to collection arrangements. For instance, healthcare professionals are allowed to deliver not more than 5 kg of clinical waste to the disposal facilities. In addition, waste producers may also deliver the clinical waste to authorized collection points set up by collectors or by individual waste producers. ➢ As there are collectors providing clinical waste collection service, we do not consider it appropriate for the Government to provide a similar collection service. Moreover, there is no reason for taxpayers to bear the collection cost for clinical waste producers.

Hong Kong Doctors Union	We want to thank you for relaxing certain restrictions to make it easier for doctors to follow and to apply certain degree of flexibility, e.g. the use of rigid containers instead of necessarily using the sharp box prescribed. However we want to draw your attention to the matter of the barrel parts of syringes as distinct from the needles. The barrel parts of syringes are not hazardous for many reasons, such as:- (1) Most barrels only contain remnants of medications and never come into contact with body fluids. (2) Some are parts of discarded expired syringes. (3) Syringes without needles are often used to assist children taking medication. (4) Syringes used to inject fluid into catheters. (5) Syringes used to inject air into certain medical equipments, e.g. foley's catheters. Thus the barrel parts of syringes must be distinguished from needles that need special treatment. However, we want to emphasize that we will treat syringes contaminated with blood or body fluid as clinical wastes without separation. In the past communications with your department, HKDU have repeatedly obtained reassurance that barrels not contaminated can be given the option of not being treated together with the needles, noting that to separate needles from the barrels with curved forceps and discarding the needles into a sharp box is a safe and easy procedure, a practice routinely followed for the past years by many colleagues. We think it is important that this is clearly written into your proposed scheme so that the majority of doctors will not be inconvenienced by the minority of doctors who are too lazy to separate the used needles from	➢ Unused syringes including expired syringes are not clinical waste. ➢ Third parties may not be able to distinguish contaminated syringes from uncontaminated ones, we consider that used syringes, including the barrel parts, should be disposed of as clinical waste

	the barrels parts of the syringes. The great majority of doctors do not have the office space to accommodate the largely exaggerated final amount of wastes if the barrels are to be included. Finally we wish to seek your department's further assistance by allowing us to use our staff under our supervision, other than trained nurses to transport clinical wastes. We note the sincerity of the government in ensuring a safe and clean environment but we have to point out public concern was only apparent in one article on discarded syringes containing blood published by one magazine notorious for stirring up public fear and later proven to be largely exaggerated, just like the recent scare of antibiotics in crabs. No other such concern has been raised by the public at all.	➢ To provide for more flexibility in clinical waste disposal, healthcare professionals are allowed to deliver clinical waste of not more than 5kg to authorized collection points or licensed disposal facilities. Registered doctors, dentists, veterinary surgeons, registered and listed Chinese medicine practitioners, registered and enrolled nurses are included as healthcare professionals since they are professionally trained and have the knowledge on the health risk associated with clinical waste. This is in line with international practice.
Practising Estate Doctors' Association	Before commenting on the document, we would like to stress that there has been no evidence up to date to implicate small clinical waste producers with any infectious disease documented in Hong Kong. If any investigator wish to search in the garbage bags of clinics, untie these bags and pour out needles from closed containers, and then get a needle stick injury, they are doing it at their own risk. The Practicing Estate Doctors' Association in general agreement with the proposals in the Document. Under the heading of "6. Collection and Transportation of Clinical Waste", we support that Health Care Professionals may transport their clinical waste to an authorized collection point or a licensed disposal facility themselves. We urge the Government to set up more licensed disposal facility for Health Care Professionals. In fact, throughout the 18 regions of Hong Kong, public hospitals and government out-patient departments	➢ Welcome the support for the proposed Control Scheme. ➢ As there are collectors providing clinical waste collection service, we do not consider it appropriate for the Government to provide a similar collection service. Moreover, there is no reason for taxpayers to bear the collection cost for clinical waste producers. ➢ The proposed Control Scheme has allowed sufficient flexibility for clinical waste producers in regard to collection arrangements. For instance, healthcare professionals are allowed to deliver not more than 5 kg of clinical waste to the disposal facilities. In addition, waste producers may also deliver the clinical waste to authorized collection points set up by collectors or by individual waste producers.

	can and should provide storage facilities and act as collection points for Health Care Professionals. This is especially important in out-lying islands and remote areas where the collection facilities may not available, and if available, would be at an enormous fee.	
Hong Kong Dental Association	The Hong Kong Dental Association (HKDA), being the representative of the Hong Kong dental profession, supports the Government's initiative to control the disposal of clinical wastes. As accountable healthcare professionals, we deeply share your concern on safeguarding the public and environment against the potential danger of clinical wastes. As a matter of fact, many of our members had been practicing proper disposal of clinical wastes as part of the infection control protocol. Your document has clarified and uniformed the practice. In response to the Proposed Clinical Waste Control Scheme Consultation Document, we have the following recommendations and comments in different aspects. **Setting of New Regulation and Code of Practice**	➢ Welcome the support for the proposed Control Scheme.
	■ We welcome the proposal of setting a new regulation to control the collection, transport and disposal of clinical waste.	➢ Noted the support for the proposal.
	■ We support the establishment of Code of Practice to provide guidance on the proper management of clinical waste.	➢ Noted the support for the proposed publication of a Code of Practice for the proper management of clinical waste.
	Definition of Clinical Waste At the forum held on 26 August 2001, our members expressed the concern in classifying the dressings / swabs contaminated with saliva and blood. Your clarification at the 21 January	➢ In Section 3.1 of the Draft Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers, we propose that dressings that are classified as clinical waste are those dribbling with blood, caked with blood or containing free-flowing blood. Hence, those that

	2002 meeting was deeply appreciated. However, these clarifications were not included in the Consultation Document published in November 2001. We hope the final draft of the code of practice will contain and confirm with these clarifications.	do not fall into the above category, be they contaminated with saliva or contaminated with a drop of blood, are not clinical waste. ➢ It is impracticable to give an exhaustive list of what is not clinical waste.
	■ We principally agree the definition of clinical waste by which the Group I clinical waste is the most relevant to the dental profession which includes used syringes, needles, cartridges and scalpels.	➢ Noted the agreement regarding the definition.
	■ Based on our understanding from the Consultation Document, the used bibs, paper towels, cups, blood stained dressings, dressing soaked with saliva, plastic barriers, saliva ejectors, extracted teeth, disposable gloves are being classified as NON CLINICAL WASTE.	➢ They are not clinical waste provided that they are not mixed with other groups of clinical waste or they do not fall within the definition of Group 6 clinical waste.
	<u>Cost of clinical waste collection</u>	
	■ We are worried about the ever-escalating cost after the scheme is being implemented, especially the adoption of new technology in the future.	➢ Noted the concern.
	■ As the running expenses of the clinical waste collector is directly related to the monthly cost of clinical waste collection paid by the dental clinics. So (1) The Licensing fee of the clinical waste collectors ($20,000 for 2 years) and (2) The Landfill charge of clinical waste at the disposal facility ($3 for 1kg) paid by the clinical waste collector.	➢ We believe that sufficient number of qualified clinical waste collectors being available in the market and the competition should be able to keep collection fees at a reasonable level. ➢ Regarding the disposal facility, the Government is reviewing different available technologies for treatment of clinical waste. The disposal cost of $3/kg is a rough

	Both of their annual percentage of adjustment should not be higher than inflation rate or the Consumer Price Index (CPI) of the HKSAR. Otherwise, the medical and dental profession should be consulted.	estimate, which we believe would be sufficient for most of the potential treatment methods. ➢ After a charging level is set, any increase will be subject to negative vetting by the Legislative Council, and relevant parties will be consulted beforehand.
	■ As the amount of clinical waste produced in every clinic is so minimal, waste collection for small clinical waste producers may not be viable business of its own. The market force will drive some of clinical waste collectors out of business and the remaining few can easily engage in some form of pseudo-monopoly. The clinical waste producers will end up having no bargaining power over the collectors to negotiate reasonable price. Compliance of code will be undermined.	➢ We believe that there will be sufficient clinical waste collectors in the market to ensure that the collection cost is kept at a reasonable level.
	■ The Government must be prepared to intervene when a free market is not operating. Intervention may take the form of encouraging competition by facilitation or subsidization. Or the service may become government-owned.	➢ As there are collectors providing clinical waste collection service, we do not consider it appropriate for the Government to provide a similar collection service. Moreover, there is no reason for taxpayers to bear the collection cost for clinical waste producers.
	In order to gather comments and ideas from our members, a questionnaire on the Consultation Document on the proposed clinical waste control scheme was sent and results are summarized as follows:	
	■ Most of the members agree the classification and definition of clinical waste.	➢ Noted the support for the proposals.
	■ Most of the members agree that clinical waste should be properly packaged and labeled.	
	■ Most of the members agree that safe and secure	

	temporary storage facility should be provided to store the clinical waste pending transportation to final disposal. ■ Most of the members agree that clinical staff should take all necessary safety measures in handling clinical waste. ■ Most of the members DO NOT AGREE that clinic should keep records of clinical waste collection and produce the record of trip tickets for inspection upon requests by the Director of Environment Protection. ■ Most of the members DO NOT AGREE that it should commit an offence with the punishment of imprisonment for those who fail to arrange their clinical waste to be delivered to a licensed disposed facility. ■ Most of the members agree that the cost of clinical waste collection should be monitored.	➢ For a control scheme to work effectively, all parties of the clinical waste management chain, i.e. producers, collectors and disposal facilities, have to cooperate. The proposed trip ticket system aims to facilitate tracking of the movement of clinical waste from the point of arising to the final site of disposal, and to ensure that all clinical waste produced is disposed of properly. Foreign practices have demonstrated that this is an effective mechanism for management of clinical waste. ➢ Like any regulation, sanctions are required to deter producers from disposing of their clinical waste illegally. The maximum fine of $200,000 and imprisonment of 6 months are the proposed maximum penalty. The actual penalty level will be decided by the court. ➢ Noted.
<u>Hong Kong Veterinary Association</u>	The HKVA sees the regulation and legislation of clinical waste produced by minor producers (including veterinary surgeons) as a positive initiative. However we wish to make the following points : - The cost of collection mentioned in Section 3.2 (i.e. $30-$300 per month depending on amount of material) is regarded as acceptable. However, is there any mechanism proposed to limit the amount of	➢ We believe there should be sufficient number of clinical waste collectors in the market to ensure that collection fees are kept at a reasonable level.

	fee movement in future (i.e. is there a safeguard that once legislation is introduce, fees will not skyrocket)? Will the Government also charge fees for collection/ disposal and if so are these fees included in the above cost structure?	➢ The estimated cost of collection mentioned in Section 3.2 of the Consultation Document does not include disposal cost. An estimated disposal cost of $3/kg is given in the Consultation Document (Section 4.2) for reference.
	- The trip ticket system will add some administrative burden, but seems relatively simple and not too onerous.	➢ Comment noted.
	- When legislation is introduced, will there be a well-publicized education campaign targeted at the minor clinical waste producers? Is there information already available on the Environment and Food Bureau or Environmental Protection Department websites? If so, please forward the relevant URL to the undersigned so that a link can be placed from the HKVA website.	➢ Relevant information will be available at http://www.info.gov.hk/epd/wmg/waste/clinical_waste/index.htm. ➢ We will consider organizing talks/seminars for relevant trades when the Control Scheme is implemented.
	- How will the relevant Government department circulate or make available the list of Licensed Clinical Waste Collectors and Disposal Facilities and what protection or guarantee will small clinical waste producers have that these collectors are licensed and operating within the law? The HKVA considers that tight controls on the Waste Collectors and Disposal firms are essential, so as to avoid unjustified publicity if clinical waste is found to have been inappropriately disposed. This is not an unwarranted concern as this type of unjustified publicity directed toward the waste producer has occurred overseas because of the illegal/inappropriate activities of the waste collector/disposal.	➢ The list of licensed collectors is available at the Environment Protection Department's website mentioned above. ➢ Under the proposed Control Scheme, licensed collectors are required to meet the stringent requirements set out in the collection licence. EPD will closely monitor their performance, and non-compliance of licence conditions may result in prosecution and/or termination of licence. ➢ To ensure proper collection of clinical waste, waste producers should only engage collectors holding a valid licence issued by EPD.

	- Will the relevant Government departments be providing appropriate clinical waste containers or a listing of where they can be obtained?	➢ Waste producers may purchase clinical waste containers from the market (e.g. medical instrument suppliers). Some clinical waste collectors also provide such containers to their clients.
	- The main concern of the HKVA is the exemption of animal parts and specifically dead animals as clinical waste. Whilst we do not wish dead animals to be listed as clinical waste (as happened in the EU), as this causes great anguish to the owners of pets who wish to make burial or cremation arrangements for their pet, the proper disposal of unwanted animal pets and dead animals is not described in this document. Will the correct disposal of such noxious waste, which is not clinical waste be covered by this legislation, or is there already legislation covering this type of noxious, non-clinical waste?	➢ Dead animals, animal tissues, organs and body parts arising from veterinary sources or practices are not classified as clinical waste. ➢ We have not observed any major environmental problems arising from improper disposal of dead animals. Nevertheless, we would be happy to give advice if HKVA would like to incorporate disposal arrangement in their existing guidelines.
	- Taking the above mentioned item one step further, please clarify the current procedure for disposal of dead animals and animal's parts (e.g. body parts removed during a surgical procedure) as the HKVA found this section relatively ambiguous. Specific issues that require clarification and/or consideration include : ♦ How can animal parts and bodies be classified as clinical waste whilst being exempt? ♦ Are you attempting to define as clinical waste those animal cadavers and parts from non-private practice veterinary or animal using institutions such as Universities, the Jockey Club Equine Hospital, Ocean Part Veterinary Hospital, the Zoological Garden	➢ As stated above, dead animals and animal parts arising from veterinary sources or practices, whether private or non-private, are excluded from the definition of clinical waste and will not be subject to control. However, dead animals and animal parts that arise from other medical sources, such as pharmaceutical research or laboratory practice, are included as clinical waste. ➢ The definition is intended to include clinical waste arising from experimental animals that may have been tested or treated in medical or pharmaceutical research, or laboratory practice. For example, if an animal is tested in a biotechnology company, the disposal of its body and body parts will be subject to control. ➢ The current practice of Universities treating only experimental animals and not breeding animals as clinical

	Veterinary Hospital, Kadoorie Farm Veterinary Hospital and other animal-using facilities (e.g. biotechnology companies)? If this is the case your definition in the guidelines is cumbersome. ♦ Furthermore many of the cadavers and animal parts from these institutions are not infectious or contaminated and should not be treated any differently than the equivalent coming from private veterinary practices. This is particularly important for the laboratory animal breeding facilities at the major universities where their breeding animals are NOT infectious and are currently not treated as clinical waste (in fact the culled breeding animals are supplied to places like Ocean Park and Kadoorie Farm as food for their raptors and reptiles), whilst their experimental animals are segregated and are treated as clinical waste. ♦ Under the Group 6 clinical waste definition, does infectious disease refer only to human infectious diseases or does it include species-specific infectious disease also (e.g. canine distemper virus infection or feline infectious peritonitis)? What is the situation for potential zoonotic diseases (e.g. Salmonellosis, dermatophytosis, rabies)?	waste is therefore in line with the proposed control scheme. ➢ As the control scheme is intended to protect human health, the infectious materials referred in Group 6 of the definition of clinical waste include zoonotic diseases but not non-human species-specific diseases.
<u>The University of Hong Kong</u>	The University produces animal waste in various forms, some from laboratories and others from the Laboratory Animal Unit, a facility which breeds animals for research purposes. It would be important for such animals to be classified as "non-clinical waste" and recognizance of this be incorporated into the appropriate sections.	➢ Dead animals or animal parts arising from veterinary sources are not classified as clinical waste. Hence, dead animals, animal parts arising from the breeding facility of Lab Animal Unit will not be controlled under the proposed Control Scheme. ➢ However, dead animals and animal parts that arise from

		other medical sources, such as pharmaceutical research or laboratory practice, would be controlled as clinical waste (Section 3.1 of the Draft Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers) as they may have been subjected to testing against drugs or infectious agents. This is in line with international practice.
	If the frequency of collection by waste collector is too long the University will incur costs in providing refrigerated storage facilities for waste.	➢ The draft Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers has recommended a maximum storage period of 3 months to provide for flexibility in collection arrangement. Individual waste producer, however, should determine the appropriate storage period, taking into account the nature and quantity of the clinical waste produced, and liaise with the waste collectors for proper disposal of clinical waste.
	Whilst trip tickets are acceptable for loads when leaving our site it would not be reasonable or practicable to extend this arrangement with our own site. I would therefore request HKU be considered as a few waste producer sites dependant on the number of geographically separate locations.	➢ If there are several sites of a certain producer (e.g. HKU campuses located in different areas), then each site should be considered as a separate waste producer and each should comply with the trip ticket requirements for transportation of clinical waste out of the site. Clinical waste from each site should be collected by licensed collectors and should be delivered directly to the licensed disposal facility. ➢ If transportation between sites is necessary, then the site receiving the clinical waste should be regarded as a collection point and should be authorized by the Authority. Only healthcare professionals would be allowed to deliver clinical waste to a collection point using private transportation. The quantity should not exceed 5kg and certain packaging and labeling

		requirements have to be met. ➢ Trip tickets are not required for transportation of clinical waste to a collection point, but the collection point operator is required to issue receipts to the waste producer delivering clinical waste there. The waste producers are recommended to keep the receipts as records of disposal.
	The EPD should seriously consider waiving of waste disposal costs from educational organizations for costs in additional labour to deal with the administration of this procedure are already quite significant. General comments a. Is the EPD considering the use of tissue digesters for the disposal of animal carcasses and human remains? You may be aware this appears to be environmental friendly procedure using caustic soda or potash at pressure and high temperature. HKU is currently looking at this technology to determine whether it would meet our need. b. There is no mention in your document about genetically modified waste, clinical or otherwise. Do you need to consider this also.	➢ We consider that the Users Pay Principle should apply. In devising the proposed scheme, we have tried to strike a balance between safeguarding public health and minimizing the financial implication to clinical waste producers. ➢ The Government plans to provide a long term disposal facility for clinical waste, and is currently reviewing different available technologies. ➢ We will discuss with the respondent separately regarding the licensing requirements for the setting up of specific facilities. ➢ GM waste is not classified as clinical waste under the proposed Control Scheme. This is in line with international practice. We will closely monitor developments in this regard.
The Chinese University of Hong Kong	1/ Tracking back to individual users within institutions should be mandatory in case of puncture wounds etc.	➢ Under the proposed control scheme, waste producers are recommended to mark or label the clinical waste containers showing the origin of the waste. Waste collectors are also required to fill in a trip ticket showing the name and other details of the waste producer.

		➢ We agree that for institutions like universities the sources of clinical waste of which are diverse, there are benefits in showing the specific source of the waste within the premises of a waste producer and this practice is encouraged. ➢ Nevertheless, we do not intend to make it a mandatory requirement for all clinical waste producers.
	2/ Any waste material with micro-organisms of what are generally accepted of risk groups 3 and 4 must be decontaminated before leaving a containment area. A potential spill in a public place eg (motor vehicle accident) of such is unacceptable dangerous practice. (See Infectious materials page 10) We are talking about different types of group 4.	➢ Decontamination of Group 3 and 4 wastes is not a compulsory requirement. We consider that with stringent packaging and collection requirements to be met by licensed collectors, the risk associated with the transportation of these waste should be limited. Waste producers however can disinfect such waste before collection if they consider it necessary.
	3/ The document as such offers no avenue of disposal for infectious waste which may contain radioactive material or cytotoxic substances. Further there is no avenue for the disposal of genetically manipulated material which may also contained ionising radiation or cytotoxic materials. This may well be quite inhibitory to medical and biological research in Hong Kong. It may also be inhibitory to some overseas organizations wishing to set up in Science Park etc. These issues when they have not been addressed overseas have caused undue problems for scientific communities. The proposed exclusion of dead animals from the list of clinical wastes raises similar issues as indeed some dead animals used in research purposes may contain ionising radiation or cytotoxic materials.	➢ Infectious waste containing radioactive or cytotoxic substances are regulated under the Radiation (Control of Radioactive Substances) Regulations (Cap.303) and Waste Disposal (Chemical Waste) (General) Regulation (Cap.354) respectively, and is outside the scope of clinical waste control. ➢ GM waste is not classified as clinical waste under the proposed Control Scheme. This is in line with international practice. We will closely monitor developments in this regard. ➢ Group 3 Clinical Waste includes dead animals arising from medical or veterinary research. ➢ Dead animals from research contaminated by radioactive or cytotoxic materials should be treated and handled as radioactive and chemical waste respectively. They are covered by separate regulations.

	4/ EPD may well consider the use of the alkaline digestion system which at least two Universities are considering purchasing. This type of high pressure apparatus combined with potassium hydroxide hydrolyses animal tissues, dissolves radiation and most likely inactivates cytotoxic chemicals, The effluent can go to sewer as long as the pH and limits of ionising radiation for sewer discharge can be met. Users of such apparatus would show a high degree of responsibility as effluent of high pH could cause damage to their own pipes. Anyway, the total amount of caustic in such a system is relatively small. This apparatus can be found on the WR2 website. 5/ What does the EPD define as small clinical waste producers? This university last year disposed of 17 tons of such waste from the Shatin campus. This was done through a registered clinical waste contractor. A vaccine producer will certainly be a large clinical waste producer.	➢ Should individual waste producers want to set up treatment facility at their premises, we will discuss with them separately regarding the licensing requirements for the setting up of specific facilities. ➢ Support the University's precautionary approach in handling animal waste. ➢ In case the amount of clinical waste so generated warrants the University to be treated as a major producer, the University may make reference to the separate Code of Practice for major producers.
Hong Kong Baptist University	(Translation from Chinese) 1. Concerning paragraph 3.4, I think the qualifications of healthcare professionals should be clearly defined, say, it refers to registered healthcare professionals. Yet, in respect of Chinese medicine practitioners, are their qualifications being recognized? 2. In Annex I, it is mentioned that small clinical waste producers include "private Chinese medicine house" (私家中醫館). Would it be more appropriate to refer it as "private Chinese medicine clinic" (私家中醫診所)? Moreover, I think clinics designated for medical teaching purposes in the universities should also be considered as small clinical waste	➢ We would clearly spell out the categories of healthcare professionals. Our intention is to include registered doctors, dentists, veterinary surgeons, registered/enrolled nurses and registered/listed Chinese medicine practitioners. ➢ Agree that "private Chinese medicine clinic" (私家中醫診所) is a more appropriate wording. We will amend the text accordingly. Clinics designated for medical teaching purposes in the universities are small clinical waste producers under "Universities with medical teaching or research (including Chinese medicine)".

	producers. 3. Among the different types of clinical waste, needles for acupuncture [such as ordinary needle (普通針), plum-blossom needle (梅花針) and three-edged needle (三棱針)] should be specified as a kind of clinical waste. 4. As for the storage of clinical waste, it is mentioned: "Prolonged storage of clinical waste within the premises is not recommended and storage should not be longer than 3 months". In my opinion, the 3-month period seems too long. 5. In addition, it seems that the consultation paper has not touched on the ways to treat the emissions generated during the medical process.	➢ Needles are under Group 1 clinical waste (Used and Contaminated Sharps) and they include all types of acupuncture needles. ➢ The 3-month period is the recommended *maximum* storage period to allow for flexibility in the collection arrangement. Individual waste producer, however, should determine the appropriate storage period taking into account the nature and quantity of the clinical waste produced. In any case, they should properly pack, seal, and store the clinical waste and they should not cause any nuisance as a result of storage. ➢ Odour problem is a separate issue and it falls outside the scope of the proposed Control Scheme which focuses on handling of waste only.
City University of Hong Kong	Since the control of clinical waste is in the interest of the community as a whole, we are in total support of legalizing a Control Scheme.	Welcome the support for the proposed Control Scheme.
The Hong Kong Jockey Club	I am pleased to report that the Hong Kong Jockey Club's Veterinary Department has no comment to make on the Consultation Document and as a small clinical waste producer, it foresees no problem in being able to comply with the proposed procedures as detailed in the Draft Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers.	➢ Welcome the readiness to comply with the proposed Control Scheme.
Ocean Park	We have no comments on the proposed scheme.	Noted.

Hong Kong Environmental Law Association	Draft Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers Section 2.2 A general guideline for medical waste reduction using several successful models based on environmental health criteria	➢ The draft Code aims to clearly define what are and what are not clinical waste. EPD is also liaising with the medical sector (e.g. all hospitals managed by the Hospital Authority) to reduce the amount of "clinical waste" that requires special handling by segregating other useful materials for recycling, e.g. provision of recycling bins for collection of aluminum cans, paper and plastic containers. The EPD will continue to liaise with the medical and healthcare professions to further reduce the amount of waste produced.
	Section 3 A practical sub-classification of clinical waste based on risk factor analysis, toxic release indicing, and controlled disposal methodology should be considered in order to assess and prioritise the cost of medical facility waste management and disposal. This kind of categorization philosophy if implemented together with the next section "**SECREGATION, PACKAGING AND LABELLING OF CLINICAL WASTE**" has been shown to induce budgetary benefit for the some medical facilities.	➢ Agreed. In devising the proposed definition, such factors have been considered and only clinical waste that may pose significant health risk is included under the current definition. ➢ The Hospital Authority has already carried out proper segregation of clinical waste from non-clinical waste and it is found that the amount of clinical waste produced has been reduced.
	Section 3.1 (Group 4 – Infectious Materials) USOSHA nosacomial infection monitoring, preventive procedures and risk-management guidance notes should be added as reference procedures targeting higher levels of compliance. Standard testing protocols are now available for liability evaluation and risk assessment for illegally processed pathogens. Management of nosocomial and anti-biotic resistant infection in some medical facilities has been tied into the nosocomial infection investigations (Reference 2 and 3) and monitoring (references 4 and 5). High risk subclasses of	➢ Comments noted. These are known problems in hospital settings. The Hospital Authority has set up infection control units in most of the hospitals to monitor the said situation.

	pathogenic medical wastes have been targeted by these facilities on modified methodologies for collection, transportation and disposal to accommodate the heathcare facility environmental health programs. <u>Section 3.2</u> What is the safeguard for reporting and the penalty if any when the following excluded clinical wastes were illegally dumped as clinical waste?	➢ Clinical-type waste arising from domestic premises will not be subject to legal control. ➢ Radioactive waste is controlled under the Radiation (Control of Radioactive Substances) Regulations (Cap.303). Owners of radioactive waste are required to dispose of the waste in accordance with the provisions of the Regulations. ➢ Chemical waste is subject to control under the Waste Disposal (Chemical Waste) (General) Regulation (Cap.354). The Regulation clearly defines the reporting requirements and the penalties for non-compliances. ➢ For dead animals and animal tissues that are not classified as clinical waste, there is no dedicated regulation to govern their collection and disposal but the waste producers should still exercise general care in handling such waste. Otherwise, they may be liable to prosecution under the Public Health and Municipal Services Ordinance (Cap.132).
	<u>Section 4.1</u> How are the penalties for non-compliances assessed if different from other hazardous wastes?	➢ The penalties for non-compliances with the clinical waste regulation will be modeled after the Waste Disposal (Chemical Waste) (General) Regulation (Cap.354

		subsidiary legislation) hence will be similar to other hazardous waste.
	<u>Section 6.2</u> Is the licensing process involves both professional training and equipment installed for risk factors management at various stages from collection to disposal? How are the protocol compliance being monitored and the penalty-phase implemented.	➢ Licensed clinical waste collectors and disposal site operators will be required to prepare detailed operation manuals, including the equipment used and training to be provided to staff, to ensure high-quality operation and a satisfactory level of environmental hygiene and pollution control during the waste collection, treatment or disposal operations. ➢ Non-compliance will lead to prosecution for breach of licence condition and revocation of licence.
	<u>Section 6.4 and 6.5</u> Should this be a "non-option" because of the potential frequency of abuses. How are the penalties for non-compliance assessed and implemented differently if the abuses can be monitored at all?	➢ To allow for flexibility in collection arrangement, healthcare professionals will be allowed to carry not more than 5kg of clinical waste to authorised collection points or to the disposal facilities. ➢ The proposed arrangement has taken into consideration that healthcare professionals practicing on outlying islands may want to or need to deliver their clinical waste to authorized collection points or licensed disposal facilities situated in urban areas. They can only do so provided that they comply with the conditions set out in Section 6.4 of the draft Code of Practice. ➢ Since this option will only allow the healthcare professionals to transport small quantities of clinical waste, and they have to comply with the packaging and labeling requirements stipulated in the Regulation, we consider that the environmental risks associated would be low.

		➢ Any waste producers, including those who deliver their clinical waste themselves, will have to produce documentary evidence to demonstrate that they have properly disposed of clinical waste (e.g. receipts from the disposal facility for those who deliver by themselves). ➢ Non-compliance of any requirements for self-delivery may be liable to prosecution for not taking precautionary measures for preventing any hazard or danger to public health of safety or pollution or risk of pollution to the environment.
The Hong Kong Institution of Engineers	The Institution does not have any specific comments.	Noted.

II. From Individuals

Respondent's Comment (Extracts)	Government's Response
In the regard of the clinical waste scheme, I am fully support. But, it will be better off to simplify the procedures and make it more practical. Indeed, private organizations are not able to adopt the scheme without government subsidies.	Welcome the support for the proposed Control Scheme. We do not support provision of subsidies for waste producers. Taxpayers should not bear the cost for handling waste generated by waste producers. The users pay principle should apply.
I agree that all clinical waste producers should be included in the scheme to ensure that clinical waste to be disposed properly. However, I do not agree on your classification of clinical waste producers. Nursing homes are classified as major waste producers like hospitals and maternity homes. In practice, nursing homes are very different from hospitals and the operation is more like residential care homes for the elderly. The amount and types of clinical wastes are similar to residential care homes. It is not reasonable to put nursing homes which are only small clinical waste producers into the major producers list just because nursing homes are under the same ordinances for hospitals. Therefore, I suggest that nursing homes should be classified as "other relevant organizations" in the list of small clinical waste producers and follow the Code of Practice for small clincial waste producers.	➢ Taking into account the amount and types of waste generated, we agree to classify nursing homes as small clinical waste producers.
Obviously, a code of practice is not going to stop this dangerous and dastardly practice from happening again. Legislation is essential, and it needs to be enacted sooner rather than later, before some unfortunate person contracts a deadly disease from stepping on a disease-bearing needle. I am not interested in pussyfooting around with codes of practice when peoples' lives are at stake. I am interested in the rigorous enforcement of stringent legislation. I suggest that this needs sorting out NOW - not in 3	➢ Under the proposed control scheme, clinical waste producers will be legally required to arrange for proper disposal of their clinical waste. ➢ The Codes of Practice are practical guides for the relevant trades. ➢ Adequate time has to be allowed for necessary legislative amendments in order to give effect to the scheme. ➢ We must also allow time for the relevant parties to make the necessary arrangements and prepare for the new control requirements.

years' time.	
Clinical waste is typically removed from the source and treated, incinerated or used as land fill at remote locations. During the collection and transportation process there are inherent risks should spillage occur in a public place. This is a world wide problem but the risk would be more significant in a place such as Hong Kong due to the high population density and traffic congestion. In summary on site processing of clinical waste will not only help remove hazards related to handling such waste but also should provide some cost savings. We hope therefore you will seriously consider our proposal in your deliberations.	➢ We have separately conducted a thorough review of clinical waste treatment technologies. ➢ Appreciate the information provided.
It has concerned me greatly that for one whole year I was searching for a company to collect used needles and also bloody towels from me. Although I kept one years supply of used needles, I had to dispose of the towels and razor blades into the garbage. At every turn, I was told to "throw the needles in the rubbish bin". I also had a garbage company search for me also, and they had the same answers given to them. Education is a key in HK. There are so many problems surrounding disposal in public bins for clinical wastes. I noticed tattoo studios were **not** a part of your new constitution, and this means there is a loop hole in your proposal. I am using needles every day, and bloody towels and razor blades, new for each customer, and consider it a danger to the public that we would not be governed by law to facilitate proper waste disposal. Although I am glad to see that HK has admitted there was a problem.	➢ A list of clinical waste collectors can be downloaded from (http://www.info.gov.hk/epd/wmg/waste/clinical_waste/index.htm) for reference. ➢ Unlike clinics and hospitals, service in tattoo shops is not clinical practice. The used needles and towels generated are thus no more hazardous than general household waste with sharp edges. We do not regard such waste as clinical waste in the proposed new legislation. ➢ We understand it is common practice for tattoo shops to store used needles or razor blades in puncture-resistant boxes. Such practices are encouraged.
I am working in a care & attention home. I find out that most of the clinical waste products produced are mainly the dailing dressings for the wound, unused medication and used syringes etc.	➢ Used syringes are classified as clinical waste. ➢ Depending on their nature, unused medication or drugs may be classified as chemical waste, which is governed by a separate

Please note that unused medication were produced at home when the resident passed away, the visiting doctor changed the medication, or the client was admitted to the hospital and the medical doctor at the hospital changed the medication eventually. If one really collects the unused medicatin, in only six months time, the total weight for those unused medication can be more than 10 kg. However, in the proposed Clinical Waste Control Scheme, the content did not mention about those unused medication or only mention it vaguely. For instances, "the clinical waste products" & "cytotoxic drug". It would be wise to mention clearly in the content that "unused medication in all forms" was also included in the Scheme. For the disposal of the clinical waste products, it must be feasible for those small homes. Can the disposal procedure involved the nearby Out-patient-department which is under the department of health or Hospital Authority. If the diposal procedure is complicated, one can hardly compile the ordinance. Thank you for your attention.	regulation under the Waste Disposal Ordinance. You may wish to make reference to the Environmental Protection Department's publication "A Guide to the Chemical Waste Control Scheme". ➢ "Cytotoxic drug" is classified as chemical waste. Please make reference to Section 3.2 of the draft Code of Practice for proposed handling procedures for syringes holding residual cytotoxic drug. ➢ As there are collectors providing clinical waste collection service, we do not consider it appropriate for the Government to provide a similar collection service. Moreover, there is no reason for taxpayers to bear the collection cost for clinical waste producers.
1. Can the fees for disposing clinical waste be waived for elderly homes to reduce their expenses? 2. Can elderly homes directly deliver clinical waste to nearby clinic or hospitals, and not engage private clinical waste collectors, so as to reduce the expenses of elderly homes?	➢ We do not support provision of subsidies for waste producers. Taxpayers should not bear the cost for handling waste generated by waste producers. The users pay principle should apply. ➢ The proposed Control Scheme has allowed sufficient flexibility for clinical waste producers in regard to collection arrangements. For instance, healthcare professionals are allowed to deliver not more than 5 kg of clinical waste to the disposal facilities. In addition, waste producers may also deliver the clinical waste to authorized collection points set up by collectors or by individual waste producers.

3. Can government clinics or hospitals provide free clinical waste containers (sharps boxes or plastic bags), and provide waste packaging, labeling services.	➢ As there are collectors providing clinical waste collection service, we do not consider it appropriate for the Government to provide a similar collection service. Moreover, there is no reason for taxpayers to bear the collection cost for clinical waste producers. ➢ Waste producers may purchase clinical waste containers from the market (e.g. medical instrument suppliers). Some clinical waste collectors also provide such containers to their clients. Clinical waste containers are usually sold with labels printed on them. Alternatively, these labels could be downloaded from the Environmental Protection Department's website in the near future.
Section 2.2 of the Consultation Document It is recommended HK EPD to administer the registers of both licensed clinical waste collectors and disposal facilities. The registers should be available at the designated webpage and regularly published in the Gazette. This practice is able to reduce the administrative burden of clinical waste producers on hiring a licensed clinical waste collector and to provide effective control of the proposed Regulation.	➢ A list of licensed clinical waste collectors and disposal facilities will be available from EPD when the control scheme is implemented and will be updated periodically. It will also be available at EPD's webpage for easy reference.
Section 2.4 of the Consultation Document It is understood that Annex 1 is to differentiate the control practices on small clinical waste producers and major clinical waste producers. However, the potential risk associated from clinical wastes is dependent on the nature and quantity of clinical wastes. Comprehensive study is a must to evaluate the potential risk variation of clinical wastes associated from small clinical waste producers and major clinical waste producers if the distinction enclosed in Annex 1 is adopted. Alternatively, it is recommended that small clinical waste producers and major clinical waste producers to use the same control practices.	➢ We have examined the nature and quantity of the clinical waste produced by the various trades. We have carried out field visits to the different establishments to determine their waste arising and the associated health hazard, before suggesting the proposed classification of small and major clinical waste producers. We have also made reference to overseas control scheme and consider that the different measures proposed for the small and major clinical waste producers are adequate for the protection of public health.
Section 2.5 of the Consultation Document It is recommended to legally control clinical waste producers on keeping the copy of trip ticket or the receipt from authorized collection points	➢ We consider that the keeping of trip ticket should not be made a legal requirement. Nevertheless, waste producers should be able to

instead of just recommending waste producers to do so. Prescriptive requirements are easier to be followed by clinical waste producers and inspected during regulatory inspection.	produce some form of documentary evidence to show that they have disposed of clinical waste properly. Under the proposed Control Scheme, trip tickets and receipts from waste collectors will serve as good evidence of proper disposal.
Section 3.4 of the Consultation Document Similar to the ***point 1*** above, it is recommended HK EPD to administer the list of authorized collection points and regularly published in the Gazette. This practice is to facilitate healthcare professionals delivering clinical wastes of less than 5 kg to the controlled reception point.	➢ A list of authorized collection points will also be maintained by EPD when the control scheme is implemented and will be updated regularly.
Annex 1 of the Consultation Document The term of "other relevant organizations" is recommended to be clearly stated instead of using such generic term to prevent confusion.	➢ Although we believe the list of small clinical waste producers in Annex I is quite complete, it would be difficult for us to prepare an exhaustive list, given the large variety of source of clinical waste. However, trades and organization could make enquiry to EPD on whether the wastes they produce are considered as clinical waste.
Section 2.1 of the Draft Code of Practice for Small Clinical Waste Producers Section 2.1 stated that clinical waste producers are responsible to ensure the staff to take all necessary safety measures in handling clinical waste. The levels of safety measures relied on professional opinions with much variation. It is recommended to specify the fundamental safety measures in handling of clinical wastes such as requirements of secondary contamination, temporary storage areas, content of spill kits, etc.	➢ During previous consultation with the medical profession, it has been suggested that the medical profession has the knowledge to handle clinical waste and the Code of Practice for small producers should be as simple as possible. If any small clinical waste producers wish to have more information on specific areas of clinical waste management, they may consult the Code of Practice for the major producers for further details.
Section 2.1 of the Draft Code of Practice Section 2.1 stated that clinical waste producers are responsible to provide "sufficient training" to the staff who handles clinical waste. It is recommended to provide detailed specifications and description to fulfill the term of "sufficient training". Otherwise, clinical waste producers may just request general janitors to handle clinical wastes but not provide adequate and suitable training. For your consideration, HK Labour Department uses the scheme of registered training course to qualify	➢ Since clinical waste management is relatively simple for small clinical waste producers, attending training course on clinical waste management is not a compulsory requirement. The healthcare professionals may decide on the nature and extent of training required for their staff who handles clinical waste in their premises. Information on training courses available would be provided in due

"competent person" in the relevant regulations. **Section 4.2 of the Draft Code of Practice** It is recommended to standardize color of container (yellow) to pack Group 3 Waste - Human and Animal Tissues no matter of the quantity for better identification. Additionally, the term of nuisance odour generation is subjective. **Section 9 of the Draft Code of Practice** It is recommended to enclose the detailed requirements/description of the suitable protective equipment and contents of spill kit in the Code of Practice. **10.Others** It is recommended to regulate clinical waste collectors to carry clinical wastes from clinical waste producers to clinical waste disposal facilities within a designated period due to the infectious properties and biohazards of clinical wastes. Conclusively, control of clinical wastes is necessary to protect the health of HK public and prevent accidental release to community. Although clinical waste producers may suffer the additional cost, it is legitimate to control this aspect legally. From my experience, the quoted cost of clinical waste collection is questionable. It is recommended to further explore the cost to be incurred on the clinical waste producers.	course. ➢ As small clinical waste producers produce very little Group 3 waste, it may not be practical for them to segregate such waste and store them separately in yellow bags. Hence provided that the wastes do not generate nuisance, we recommend that small quantities of such waste may be stored in red bags. This practice is, however, not allowed for major producers. We agree that the term "nuisance" may be subjective. However, under the context of storage of human and animal tissue waste, it mainly refers to the unpleasant conditions due to rotting of such waste. ➢ Please see our response to point 6 above. ➢ Such requirements would be specified in the clinical waste collection licence.
<u>Section 2.1</u> Is it a strict liability offence? If so, it is unfair because some waste specified in this CoP cannot be identified under several day test, e.g. Infectious Materials. If a medical staff want to dispose of a waste but not	➢ It is an offence of strict liability for improper disposal of clinical waste. ➢ Group 4 Waste—Infectious materials refer to those wastes from

sure whether it is contaminated, what should he do? Either dispose or not may cause an offence. If the medical staff dispose that waste as normally but later, it is contaminated by infectious materials, it is an offence. On the other hand, if the medical staff dispose that waste as clinical waste but actually, it is a normal waste. He hasn't fulfill his obligation to segregate normal waste from clinical waste. It may cause an offence depends on exact wording of proposed ordinance Regulation.	patients with specific pathogens and are mainly generated from isolation wards. In case there are any uncertainties about the waste nature, the waste producer may consider treating the waste as clinical waste as a precautionary measure. ➢ It would NOT be an offence to dispose of non-clinical waste as clinical waste but not vice versa.
<u>Section 3.1 (first bullet)</u> It is better to include a list of targeted waste producer to prevent arguing, e.g. register elderly home. Otherwise, problems may arise in court regarding whether elderly home providing services for sick? What is the meaning of sick? What is service?	➢ Any parties who generate clinical waste as defined in the proposed Regulation would be subject to control. A list of clinical waste producers is given at Annex I of the Consultation Document for reference. ➢ According to the definition of clinical waste, elderly homes will come under the proposed Control Scheme if they provide medical care to the residents and produce any groups of clinical waste as specified at the proposed Code of Practice.
<u>Section 4.1</u> 1. What is the meaning of "point of arising"? The whole premises or the room for operations? 2. Is it means that temporary storage of unsorted waste is not allowed? 3. Who bear the liability if not proper storage? The one produce it or the owner of the premises?	➢ It refers to the premises as a whole. ➢ Clinical waste should normally be segregated from municipal waste at the time of its generation. It is not recommended to mix it with municipal waste and to sort the mixed waste afterwards. In that case, the municipal waste is likely to be contaminated with clinical waste and the whole lot has to be treated as clinical waste. ➢ The waste producer should be liable for improper storage of clinical waste. Despite that, the proposed legislation would have provision to allow the Authority to require the owners of premises where clinical

	waste is stored to remove the clinical waste if the waste is likely to threaten public health or cause pollution.
<u>Section 5.1</u> It is no financial incentive for small private producer to dispose of waste if the quantity is small. EPD is extremely difficult to prove that the waste is stored more than 3 months. As a result, the objective to dispose frequently cannot be achieved.	➢ The 3-month period is the recommended maximum storage period to provide for flexibility in collection arrangement. Individual waste producer, however, should determine the appropriate storage period taking into account the nature and quantity of the clinical waste produced. In any case, they should properly pack, seal, and store the clinical waste and they should not cause any nuisance as a result of prolonged storage. ➢ Given the reasonable cost of clinical waste collection, it is in the interest of the clinical waste producers not to store clinical waste exceeding the above period in view of the potential health risk of the clinical waste.
<u>Section 6.4</u> It is not reasonable for a healthcare professional to dispose of waste! No different between a healthcare professional and a layman to do this job provided that the waste is properly packaged. If the Government really want to have some control in it, It is better for the Government to provide a training course to the people to disposal of waste and the healthcare professional is excepted.	➢ To provide for more flexibility in clinical waste disposal, healthcare professionals are allowed to deliver clinical waste of not more than 5kg to authorized collection points or licensed disposal facilities. Registered doctors, dentists, veterinary surgeons, registered and listed Chinese medicine practitioners, registered and enrolled nurses are included as healthcare professionals since they are professionally trained and have the knowledge on the health risk associated with clinical waste. This is in line with international practice.
Clinical waste management continues to be a contentious issue with many countries still attempting to draft and implement guidelines and standards even though the issues have been present for well over a decade. Much has been learned and shared among many nations on this topic. It is appropriate for Hong Kong to take of advantage of those experiences and apply what works for public health and the environment. I have the following comments:	➢ Noted. We have made reference to overseas practice and experience when devising the proposed Control Scheme.

Consultation Document **Sections 1.2 /3.4:** Self regulation of small clinical waste producers is practical in that they often generate small quantities of waste. However, it would be important to regulate one aspect of the waste stream and that would be Group 1 materials - sharps. Sharps continue to be one of the most hazardous components of the clinical waste stream. There would be no argument among health care professionals that this item needs to be managed properly.	➢ We agree that sharps would pose physical hazard to cleansing workers and the public if not disposed properly. We consider it equally important to control the handling and disposal of other types of clinical waste, i.e. Group 2 to Group 6, in order to safeguard public health. Therefore, we propose imposing legal control on all clinical waste producers, major and small, instead of relying on self-regulation.
Several jurisdictions have allowed the transportation of small quantities of waste by small producers. This seems to work in rural areas. However, given the population density of Hong Kong, I would envision it would be difficult for a small producer to transport waste to collection points or a central disposal facility.	➢ To provide for more flexibility in clinical waste disposal, healthcare professionals are allowed to deliver clinical waste of not more than 5kg to authorized collection points or licensed disposal facilities. We believe this should allow sufficient flexibility for those clinical waste producers who practice in rural areas where collection service might be lacking.
I would suggest a pilot project with a few hospitals to address the variable that are not evident at this time to determine the best way forward for management of waste from small producers.	➢ Hospitals are already following most practices recommended at the draft Code of Practice for major producers. We have kept close watch of their practice and will take into account their experience in deciding way forward for management of clinical waste.
Section 3.2: It would be interesting to have a breakdown of these costs as if the proposed scheme were in place today. Cost now is based upon the existing practices that do not factor in the requirements of the proposed scheme.	➢ According to existing waste collectors, the estimated collection cost has included costs arising from the licencing system.
Section 3.3: I assume you would not allow small producers to transport clinical waste via ferry as well? It would appear personal vehicle or walking would be the only acceptable method for transporting clinical waste if one were a small producer?	➢ To allow for flexibility in collection arrangement, healthcare professionals will also be allowed to carry not more than 5kg of their clinical waste to authorised collection points or to the licensed disposal facilities by ferry. ➢ The proposed arrangement has taken into consideration that healthcare professionals practicing on outlying islands may want to or need to deliver their clinical waste to authorized collection points or licensed disposal facilities situated in urban areas.

Sections 4.1/4.2: The scheme makes no reference to the utilization of smaller/regional and/or on-site treatment systems. No mechanism is in place to approve these types of systems as well. Several countries have established standards and guidelines for the selection, use, and operation of such technologies that the EPD as well as generators of clinical waste could take advantage of. There are a number of commercially viable technologies to treat and reduce the volume of clinical waste so that it immediately creates a reduced burden on landfills. These technologies are available now and a mechanism to site them needs to be considered. I would also note that any technology selected needs to incorporate volume reduction. Many smaller countries are realizing the importance of this aspect of waste treatment. **Draft Code of Practice** **Section 3.2:** Clarification should be made regarding the disposal of syringes containing less than 3% volume of cytotoxic drugs. Can these be placed in sharps bins along with syringes that were only exposed to blood? Would all sharp bins need to be incinerated? Would other items that came in contact with cytotoxic material also need to be placed in designated containers and also be incinerated? While bulk quantities of cytotoxic materials are incinerated as they are considered a hazardous waste, trace contaminated materials have been treated via autoclaving, chemical treatment and microwaving and other treatment methods.	➢ The main emphasis of the Consultation Document is to set out the proposed legal control. ➢ Separately, we have reviewed different technologies, which include both on-site and off-site treatment of clinical waste. We will report the findings of the review to LegCo. ➢ As regards standards and guidelines for the selection of clinical waste treatment technologies, we understand that they are still under development in many places (e.g. the UL2334 in the US). We will keep in view of the development and will make reference to these standards and guidelines in regulating the future clinical waste treatment technologies if they are considered suitable for local application. ➢ Syringes containing less than 3% volume of cytotoxic drugs could be placed together with other syringes in sharps boxes. However, these sharps boxes need to be properly labeled and must be incinerated. ➢ Comments noted.
I have no further comments on the proposed scheme though I would value your advices, in due course, on which institution could I arrange my staff to receive the necessary training to undertake the necessary job commitments on this clinical waste collection services.	➢ Information on training courses would be made available when the proposed Control Scheme is implemented.

In principle, we would support a clinical waste control scheme with regulatory function. We feel that the scheme should fulfil the following objectives: (1) To minimize occupational exposure to potentially hazardous substances used in the clinics; (2) To minimize the potential risks posed to the general public. Such risks may arise from the improper handling of potentially hazardous material used clinically; and (3) To safeguard the environment from the bioaccumulative potentially hazardous wastes.	➢ Welcome the support for the proposed Control Scheme.
We notice that handling of dental amalgam has not been included in the document. Dental amalgam is one of the most widely used dental filling materials. It is basically an alloy of Mercury, Silver, Copper and other metals. The governments of many developed and developing countries are becoming increasingly aware of the theoretical risks posed to health and environment by the inappropriate management of mercury and mercury-containing wastes. In the natural environment, mercury, including that from amalgam wastes, may enter water bodies, e.g. the water column and sediments of lakes and rivers, and be transformed by bacteria into a class of organometallic chemical compounds collectively referred to as methylmercury. Methylmercury is persistent in the environment. It bioaccumulates in living tissues and is extremely toxic. Canada, the United States and many other countries have extensive programs in place to minimize the presence of methylmercury and other persistent, bioaccumulative toxic substances. The potential risks on health and environment through improper use of amalgam is a hotly debated subject in both the academia and mass media. As members of a responsible profession, we would like to bring this issue to the attention of relevant authorities and professional bodies so that a scientifically based position statement [2,3,4,5] and policy [8] on the dental amalgam can be formulated and agreed upon by all parties. We would like to propose the following:	➢ Under the proposed control scheme, dental amalgam is not classified as clinical waste because common disposal methods for clinical waste are not applicable to amalgam waste, which contains mercury, silver and other metal. We have made reference to overseas practice when devising the proposed scheme. In most developed countries, amalgam is treated separately from clinical waste. ➢ Comments on handling of amalgam noted.

1. Dental amalgam should be classified as clinical waste. 2. An intensive research on the use of dental amalgam regarding e.g. its annual consumption and impact on environmental contamination from improper disposal etc. should be conducted by relevant body, e.g. EPD, so as to identity the magnitude of the potential problem 3. An education program for the profession and the public on the use of dental amalgam should be implemented. 4. A study on suitable legislative control and guidelines [6,7] on the labeling, collection, storage, transport and disposal of dental amalgam waste should be conducted. 5. All licensed clinical waste collectors should have capacity to deal with safe disposal of dental amalgam. We cannot identify any existing licensed collectors capable of handling dental amalgam waste.	
(Translation from Chinese) We support the government's proposal to exercise control over clinical waste, including the waste collectors, by legislation. Regarding the Consultation Document on the Proposed Clinical Waste Control Scheme, we have the following feedback: 1. The government plans to exercise control over clinical waste by legislation and impose charges according to the "Polluters Pay" Principle. Our concern is that the policy will bring about an "adverse" effect (the parties concerned have to pay the service fees and the disposal fees imposed by the government at the same time). 2. Definition of clinical waste is not clear-cut.	➢ Welcome the support for the proposed Control Scheme. ➢ We consider that the Users Pay Principle should apply. ➢ In devising the proposed scheme, we have tried to strike a balance between safeguarding public health and minimizing the financial implication to clinical waste producers. ➢ Section 3.1 of the Draft Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers has set out in

	detail the classification of clinical waste. Nevertheless, if waste producers have further questions or if they are not certain of what is clinical waste, we would be happy to advise.
3. We are also concerned that some clinical waste collectors may not purchase the public liability insurance (specially for the handling of clinical waste) and the frontline collection staff have not received any vaccination and training.	➢ The public liability insurance, safety/occupational health, and training requirements would be specified in the clinical waste collection licence which the collectors must comply with.
4. We consider the cycle for collection of clinical waste for disposal should not exceed one month. From health and safety point of view, the public will hardly accept such a legislation to allow clinical waste to be stored for more than one month before disposal. We will not provide removal services of clinical waste stored for more than one month.	➢ The 3-month period is the recommended maximum storage period to provide for flexibility in collection arrangement. Individual waste producers, however, should determine the appropriate storage period taking into account the nature and quantity of the clinical waste produced. In any case, they should properly pack, seal, and store the clinical waste and they should not cause any nuisance as a result of prolonged storage.
5. The government should publicize strongly the segregation of clinical waste because we find that the general public, and even some healthcare practitioners know little about the separation of clinical waste containing infectious virus.	➢ We have been liaising closely with various trades, either directly with the waste producers or through their professional / trade associations, to provide information to them regarding the proper management of clinical waste. We would continue this effort to educate and provide advisory support to the waste producers in the proper management of clinical waste.
(Translation from Chinese) I am working in an elderly home. If there is a small bag of clinical waste (already contained in red bag), it is transported using our elderly home's vehicle to other large elderly home which handles clinical waste for handling on our behalf. During transportation, is it compulsory to have "healthcare professional" to be go along with the vehicle? Since our elderly home is small, there is only one small bag of clinical waste in several months to one year's time. Due to cost reason, it is impossible for us to pay the collection fees by licensed collectors. Our	➢ We understand there may be cost constraints to certain small clinical waste producers. To provide for more flexibility in clinical waste disposal, healthcare professionals are allowed to deliver clinical waste of not more than 5kg to authorized collection points or licensed disposal facilities. Registered doctors, dentists, veterinary surgeons, registered and listed Chinese medicine practitioners, registered and enrolled nurses are included as healthcare professionals since they are professionally trained and have the knowledge on the health risk associated with clinical waste. This is

elderly home has very little waste, but for the sake of public health, we have liaised with and got the agreement of a large elderly home to handle small quantity of waste from us. But we need to employ our elderly home's driver to deliver to this large elderly home. If I want the cleansing workers to transport from this elderly home to another one, is it necessary to have "healthcare professional" to go along with the vehicle?	in line with international practice.

Annex C

(Draft) CODE OF PRACTICE FOR THE MANAGEMENT OF CLINICAL WASTE FOR WASTE COLLECTORS AND MAJOR CLINICAL WASTE PRODUCERS

[Published under Section 35 of the Waste Disposal Ordinance (Cap.354)]

Environmental Protection Department
The Hong Kong Special Administrative Region Government
November 2001

TABLE OF CONTENTS

PREFACE

In light of the biological hazard and health risk associated with clinical waste, it is important to pay special care in the handling, packaging, storage and transportation of clinical waste in order to minimise any potential danger to health or pollution to the environment and to ensure clinical waste is properly disposed of at a licensed disposal facility. The purpose of this Code is to recommend good management practice for major clinical waste producers, clinical waste collectors, and operators of waste disposal facilities and to provide guidance for them to comply with the requirements of the Waste Disposal (Clinical Waste) (General) Regulation made under the Waste Disposal Ordinance (Cap. 354).

This Code of Practice is a statutory document published under Section 35 of the Waste Disposal Ordinance by the Secretary for the Environment and Food in consultation with the Advisory Council on the Environment. Compliance with this Code of Practice is not a legal requirement, but demonstration of compliance could be used as evidence of good practice in the course of defence.

The Enforcement Authority of the Waste Disposal Ordinance and the Waste Disposal (Clinical Waste) (General) Regulation is the Director of Environmental Protection.

1. INTRODUCTION

- Clinical waste is potentially dangerous because it can spread diseases due to the infectious nature of some waste, or because it can cause injury through the presence of sharps such as needles. In addition, clinical waste may also be offensive in nature. It is therefore important to pay special care in handling, packaging, storage, and transportation of clinical waste in order to minimise any potential danger to health or pollution to the environment and to ensure that clinical waste is properly disposed of at a licensed disposal facility.

- Clinical waste arises from a number of sources, including hospitals and clinics, medical and dental surgeries, veterinary practices, medical teaching establishments, medical and research laboratories. All clinical waste producers have the responsibility to ensure proper handling and disposal of clinical wastes to protect themselves and others from injuries and disease transmission.

- The Waste Disposal (Clinical Waste) (General) Regulation (the Regulation) is made under the Waste Disposal Ordinance (Cap. 354) to control handling, collection, treatment and disposal of clinical waste.

- This Code of Practice is designed to provide guidance to the major clinical waste producers which include all public and private hospitals, maternity homes, nursing homes and all government clinics. Small producers such as medical laboratories, private clinics, Chinese medicine/medical clinics, universities should make reference to the practices recommended in the Code of Practice for the Management of Clinical Waste for Small Clinical Waste Producers.

- In addition to this Code, the booklet – *A Guide to the Clinical Waste Control Scheme* published by the Environmental Protection Department (EPD) explains the relevant legislative provisions.

2. THE DUTY OF CARE OF CLINICAL WASTE PRODUCERS

- Clinical waste producers have a duty of care to take the following measures in managing clinical waste within the premises where the waste is generated:

  - to segregate clinical waste from other waste types and to prevent clinical waste from entering the disposal chain of general refuse;

  - to properly package and label the clinical waste enabling easy identification, including information on the source of generation;

  - to provide safe and secure temporary storage facility for clinical waste;

  - to ensure the staff to take all necessary safety measures in handling clinical waste and to provide sufficient training to them;

  - to keep records of the quantities of clinical waste collected by waste collectors and to produce such records for inspection upon request by the Director of Environmental Protection (DEP) as the Enforcement Authority; and
  - to produce a *Clinical Waste Management Plan* for reference by staff.

- In addition to the duty of care responsibility, the Regulation requires all clinical waste

producers to arrange their clinical waste to be delivered to a licensed facility for disposal. Waste producers are deemed to have discharged their duties of proper disposal of clinical waste if they consign the waste to a licensed clinical waste collector. Waste producers who fail to arrange their clinical waste to be delivered to a licensed disposal facility for disposal would commit an offence under the Regulation.

3. DEFINITION OF CLINICAL WASTE

3.1 Types of Clinical Waste

■ Clinical waste is defined as any waste arising from :

- any dental, medical, nursing or veterinary practice, or any other practice or establishment providing medical care and services for the sick, injured, infirm or those who require medical treatment;
- any dental, medical, nursing, veterinary, pathological or pharmaceutical research; or
- any 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, cartridges, ampoules, and other sharp instruments which have been used or which have become contaminated with any other group of clinical waste.

Group 2 - Laboratory Waste

- Unsterilised laboratory stocks, cultures of infectious agents and potentially infectious waste with significant health risk from dental, medical, veterinary or pathology laboratories.

Group 3 - Human and Animal Tissues

- All human tissues and animal tissues, organs and body parts as well as dead animals, but excluding dead animals, animal tissues, organs and body parts arising from veterinary sources or practices.

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

Group 4 – Infectious Materials

- Infectious materials from patients with the following pathogens: Crimean/Congo haemorrhagic fever, Ebola, Guanarito, Hendra, Herpesvirus simiae (B virus), Junin, Kyasanur forest disease, Lassa fever, Machupo, Marburg, Omsk, Russian spring-summer encephalitis, Sabia and Variola viruses. Materials contaminated by *Group* 4 waste are also classified as *Group* 4 waste.

Note: Also, the DEP 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

- Other wastes which are likely to be contaminated with :

  - infectious materials (other than infectious materials referred to in Group 4); or
  - any clinical waste being substance, matter or thing belonging to Group 1, 2, 3, or 5,

  and which may pose a significant health risk.

  Note: Apart from the DEP, healthcare professionals may also assess whether Groups **2** and **6** clinical waste is posing 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 are not subject to the requirements of the Regulation:

- clinical-type waste arising from domestic premises;
- radioactive waste, whether arising from medical sources or not, as defined under the Radiation (Control of Radioactive Substances) Regulations (Cap. 303 - sub. leg.);
- chemical waste as defined under the Waste Disposal Ordinance (Cap. 354) 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 significant residual volume in container (e.g. unused or partially used drugs in ampoules or syringes) are regarded as chemical waste and should be disposed according to the Waste Disposal (Chemical Waste)(General) Regulation. Significant residual volume means more than 3% volume of container holding the cytotoxic drugs. Ampoules or syringes holding less than 3% volume of cytotoxic drugs in containers can be placed in sharps boxes and disposed as Group 1 clinical waste. Such sharps boxes (i.e. with sharps contaminated with residual amount of cytotoxic drugs) must be incinerated and must not be disposed of by other methods.

- dead animals, animal tissues, organs and body parts arising from veterinary sources/practices, abattoirs, pet shops, farms, wholesale and retail markets, or domestic sources;
- dead human bodies.

4. SEGREGATION, PACKAGING AND LABELLING OF CLINICAL WASTE

4.1 Segregation

- Clinical waste must be kept separate from non-clinical waste and different groups of clinical waste must be segregated according to their packaging requirements. A sufficient number of appropriate dedicated containers for the storage of clinical waste should be placed adjacent or as close as possible to locations where clinical waste is generated so as to facilitate segregation of clinical waste from general refuse.

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

- Adequate instruction, training and supervision with respect to proper waste segregation should be given to all staff in handling clinical waste.

4.2 Packaging

4.2.1 General Requirements

- All clinical waste must be placed in a container (i.e. sharps box, plastic bag or plastic/fibre drum) or combination of containers that are leak resistant, impervious to moisture, strong enough to prevent tearing or bursting under normal handling. Containers shall be of the one-trip type and reuse of containers is prohibited. All containers shall be capable of being sealed in a manner that will prevent the spillage of the contents during transport from the source of arising to the point of disposal.

- Any container used to store clinical waste should be in good condition and free from contamination, damage or any other defects which may impair the performance of the container. A waste producer should carry out visual inspection of the container to determine its condition before it is used for storing clinical waste.

- No clinical waste should adhere to the external surface of the container.

4.2.2 Recommended Types of Containers

- Different groups of clinical waste should be placed in appropriate types of containers in accordance with Table 1, and containers should be securely closed and sealed as soon as possible in accordance with Section 4.2.3.

- Drums of rigid moulded plastic or fibre should be used for clinical waste containing free-flowing liquid or those clinical wastes which cannot be stored in plastic bags due to their character or high risk. Either heavy duty plastic bag or plastic/fibre drum may be used for *Groups 2, 3, 4, 5 or 6* clinical waste, provided that the container is strong enough to hold the waste without any leakage or damage. *Group 1* clinical waste must be put into sharps boxes.

- *Groups 2, 4, 5 and 6* clinical waste may be placed together in the same container provided that the waste types are compatible with each other and such mixing will NOT produce dangerous consequences due to chemical reaction or other reasons.

Groups of Clinical Waste	Type(s) of Packaging	Colour	Sealing
Group 1 (sharps)	Plastic sharps box	YELLOW or combination of WHITE and YELLOW	Proprietary closure
Group 3 (human/animal tissues)	Heavy duty plastic bag	YELLOW	Plastic tie or Proprietary

	Or Plastic/fibre drum	YELLOW	closure/tape
Group 2 (laboratory waste) Group 4 (infectious materials) Group 5 (dressings) Group 6 (other waste)	Heavy duty plastic bag Or Plastic/fibre drum	RED RED	Plastic tie or Proprietary closure/tape

Table 1: Packaging for Different Groups of Clinical Waste.

4.2.3 Specifications for Different Types of Containers

- The design, material and construction of different types of containers for clinical waste shall follow the specifications set out in Annex A.

4.2.4 Colour-Coding of Packaging

- To enable the easy and unique identification of clinical waste which is essential for subsequent handling by waste collectors and operators of the disposal facility, the packaging of clinical waste must be colour-coded as shown in Table 1.

4.2.5 Sealing of Containers

- Containers of clinical waste must NOT be filled to more than 75% of their capacity before being securely sealed.

- Plastic/fibre drums should be properly sealed by the proprietary closure/tape.

- Sealing of containers of any clinical waste in liquid form must render the sealed containers leak-proof.

- Plastic bags should be effectively sealed to prevent spillage. The swan-neck sealing method shown in Figure 1 is recommended. Other sealing methods, if equally effective, would also be acceptable.

- Waste producers should ensure adequate supply of appropriate sealing materials.

- Never use staple or unprotected metallic wire tie for sealing or tagging of plastic bag containing clinical waste, so as to prevent adjacent bags from being pierced (Note: metallic wire tie fully wrapped with plastic would be acceptable for sealing plastic bags, provided that the wires would not pierce the bags.)

4.3 Labelling

4.3.1 General Requirements

- Every package or container of clinical waste should bear an appropriate label or combination of labels of the design and size specified in Section 4.3.2. The waste producer should ensure that the information contained in the label is accurate and sufficient so as to enable proper and safe handling, storage, transportation and disposal of the clinical waste.

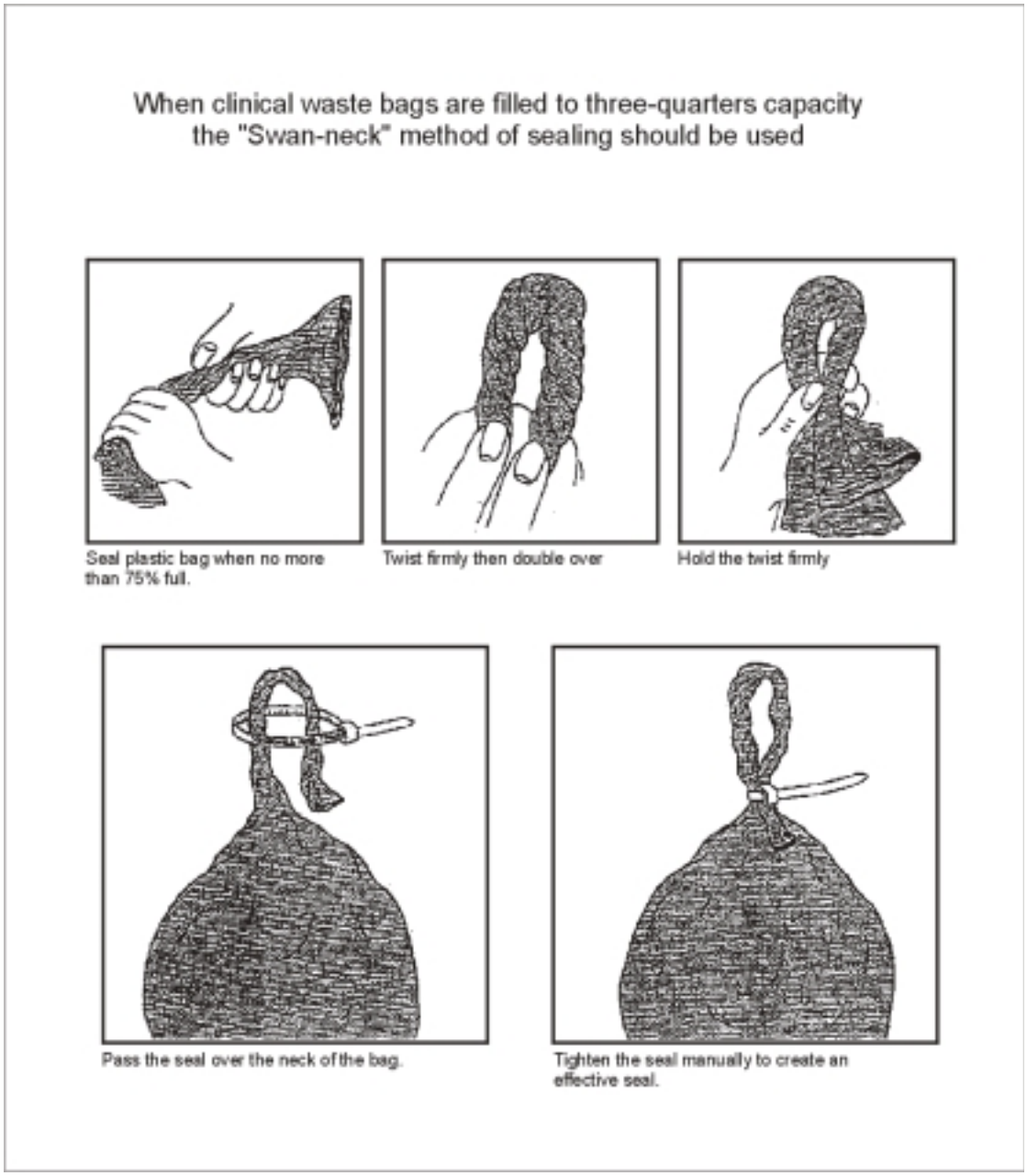

Figure 1: Sealing and Tagging Method for Clinical Waste Bags.

- The label should be securely attached to or printed on a suitable part of the container which allows the information in the label to be easily read, and not obstructed or obscured by any part/fitting of the container. Labels should be attached to or printed on the sides of containers and NOT at the heads or tops. It is recommended to attach or print two labels on opposite sides of the containers.

- Plastic bag carrier (e.g. an ordinary type rubbish bin) which supports the bag in use should be in good condition and subject to the same labelling requirements as for the plastic bag itself. The colour of the bag carrier should preferably be the same as the colour of the bag for easy identification.

4.3.2 Design of Label

- The design and specifications of the label are indicated in Figure 2. The words and the sign

may be pre-printed on the same label. The label should be pre-printed on the surface of the container as far as practicable.

- In addition, each container should be pre-printed or marked using BLACK indelible ink, or a label should be securely attached or tagged, to show the origin of the waste (including name and address of hospital or clinic) and the date of sealing the container.

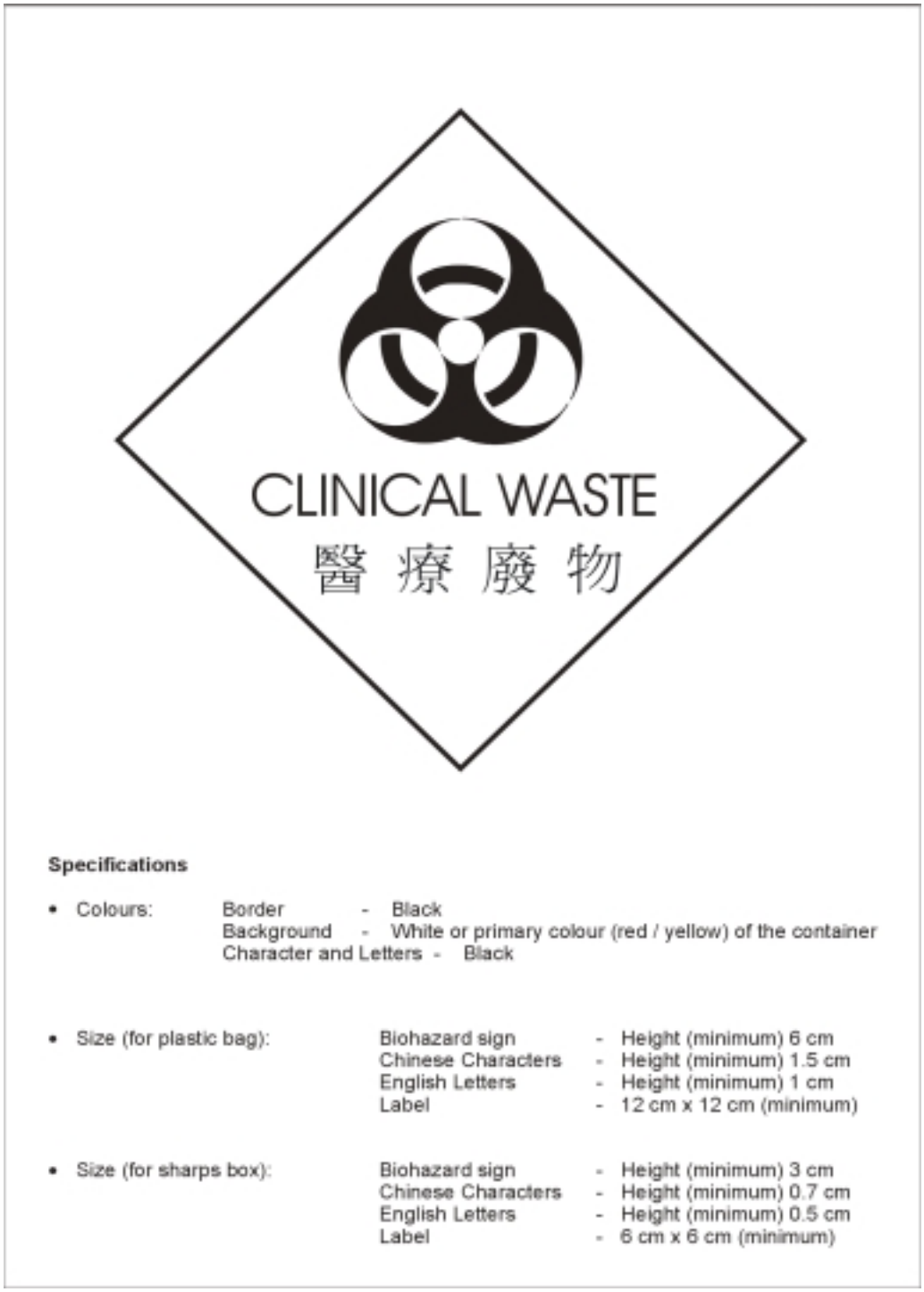

Figure 2: Clinical Waste Label.

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

- The Waste Disposal (Chemical Waste) (General) Regulation sets out specific requirements for the handling, collection, treatment and disposal of chemical waste. Under the Waste Disposal (Chemical Waste) (General) Regulation, a chemical waste producer is required to register with EPD and any person who wishes to carry out the collection or disposal of chemical waste should apply for a Waste Collection or Disposal Licence from EPD as appropriate.

- Certain clinical waste may contain chemical residues which are classifiable as chemical waste (e.g. broken thermometer containing mercury). The chemical residues should be segregated from the clinical waste at source whenever it is practical and safe to do so. Disposal of the segregated chemical waste is subject to the requirements of the Waste Disposal Ordinance (for prescribed chemical waste) and the Waste Disposal (Chemical Waste) (General) Regulation.

- Chemical waste arising from medical and dental sources is exempted from the requirements of the Waste Disposal (Clinical Waste) (General) Regulation (see Section 3.2).

- If the chemical waste has been contaminated with any infectious agents or clinical waste, pre-treatment measures should be taken to render the waste non-infectious before it is collected by the licensed chemical waste collector.

- In addition, all containers should bear a chemical waste label in accordance with the requirements set out in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.* The guidance given in that document should also be observed for the safety procedures to be followed in handling chemical waste. Special care should be taken to ensure that the packaging, storage, transportation and disposal arrangements are compatible with the chemical and physical characteristics of the waste.

5. HANDLING AND ON-SITE STORAGE OF CLINICAL WASTE

5.1 Transportation to On-Site Storage Facilities

5.1.1 General Requirements

- Clinical waste containers after being properly sealed and labelled should be transferred from the place of waste generation to the on-site storage facility as soon as possible for temporary storage before collection.

  During the transfer process, NO throwing, dropping, dragging or stepping on the clinical waste containers shall be permitted and NO containers should be left unattended.

5.1.2 Trolleys or Carts Used for Movement of Clinical Waste

- Trolleys and carts used for the movement of clinical waste within premises should be dedicated for this purpose and designed and constructed to the following specifications:

  - The surfaces should be smooth, with no rough or sharp edges (which may damage packaging);

  - Impermeable materials should be used and the design should provide containment of any spillage of waste which may occur in transit;

- The whole trolley or cart should be easily cleaned and drained; and

- The overall design should allow the bags and containers to be properly retained on the trolley or cart, safely loaded/unloaded and handled without difficulty.

■ 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 Containers

5.2.1 Provision of On-site Storage Facility

■ Clinical waste producers should provide suitable and adequate areas and facilities for temporary storage of clinical waste for the expected rate of waste arising with allowance for additional storage. The storage facility should be located close to the source of waste generation, preferably within the premises of the waste producer to minimise waste handling and to facilitate management control.

■ In the case of a hospital or clinic which generates a large amount of clinical waste, the storage facility may comprise an outdoor storage compound or an indoor enclosed structure, an example of which is shown in Figure 3. Other design of the storage facilities, if equally effective to securely store the clinical waste, would also be acceptable. Where possible, all clinical waste (except *Group* 3 waste which requires refrigeration) should be contained in transit skips inside the storage facility. All transit skips should be disinfected if contaminated by spillage.

■ In the case of a dental or general medical practice which generate small amount of clinical waste, a small lockable cabinet is acceptable. An example of a small clinical waste storage cabinet is shown in Figure 4.

5.2.2 Specifications of Storage Facilities

■ The design of the storage facility depends on the volumes and types of waste involved. In all cases, the storage facilities must be designed to meet the following specifications:

- used for storage of clinical waste only;

- adequate size to cater for the volume of waste production and frequency of collection;

- exhibition of warning sign as shown in Figure 5;

- protection of the integrity of the packaging;

- protection of waste packages from the weather (wind, rain, flooding, etc);

- maintenance of the waste in a non-putrescent state;

- covered and secure (e.g. lockable) to prevent access by unauthorised persons, animals, birds, rodents and insects;

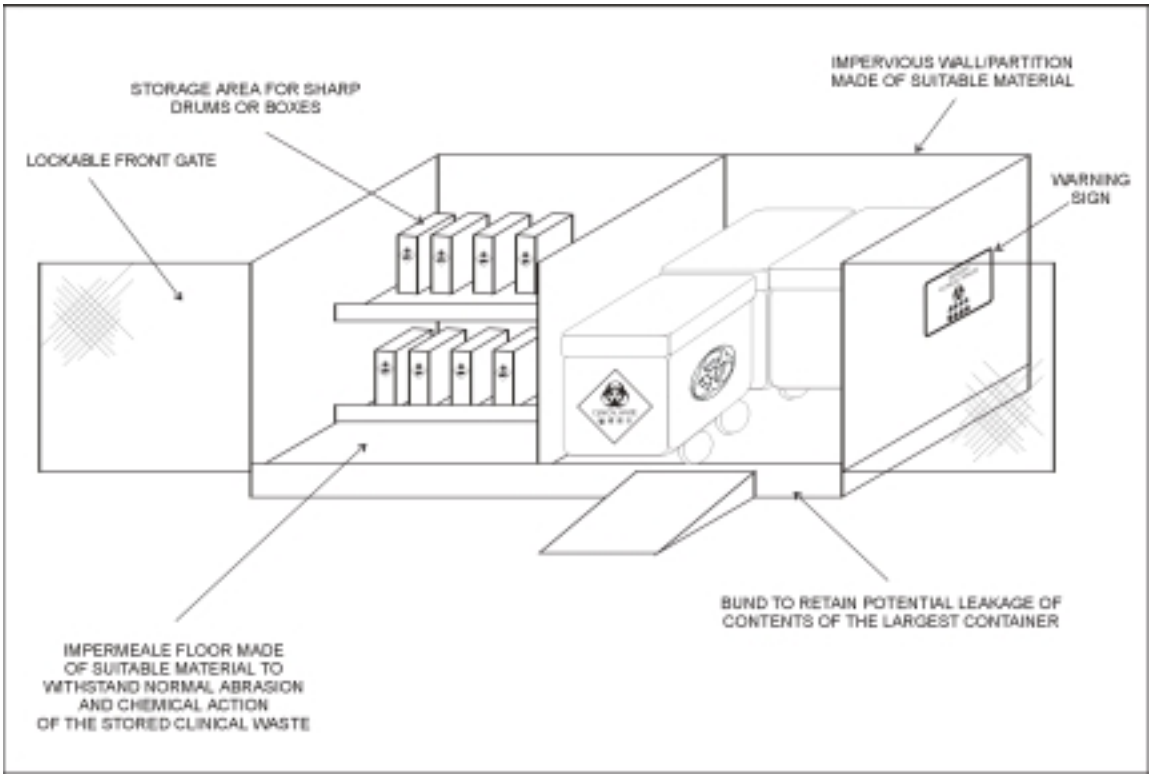

Figure 3: Schematic Drawing of a Clinical Waste Storage Facility for Hospitals and Large Clinical Settings.

- 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;
- must be installed away from any air-intake of building ventilation;
- NOT adjacent to fresh food stores or food preparation areas; and
- where possible, accessible to collection vehicles.

5.2.3 Refrigeration of *Group 3* Clinical Waste

■ Waste that may rapidly putrefy (e.g. waste containing human or animal tissues) should be stored in refrigeration units until collection for transport to the disposal facility. The requirements for refrigeration are:

- Refrigerators should be dedicated for the storage of clinical waste and must NOT be used for the storage of food or other items; and
- Refrigeration units used to store waste for up to 10 days must be maintained at a temperature of below 5°C, and those used for longer periods (up to 1 month) must be maintained at a temperature of below 0°C.

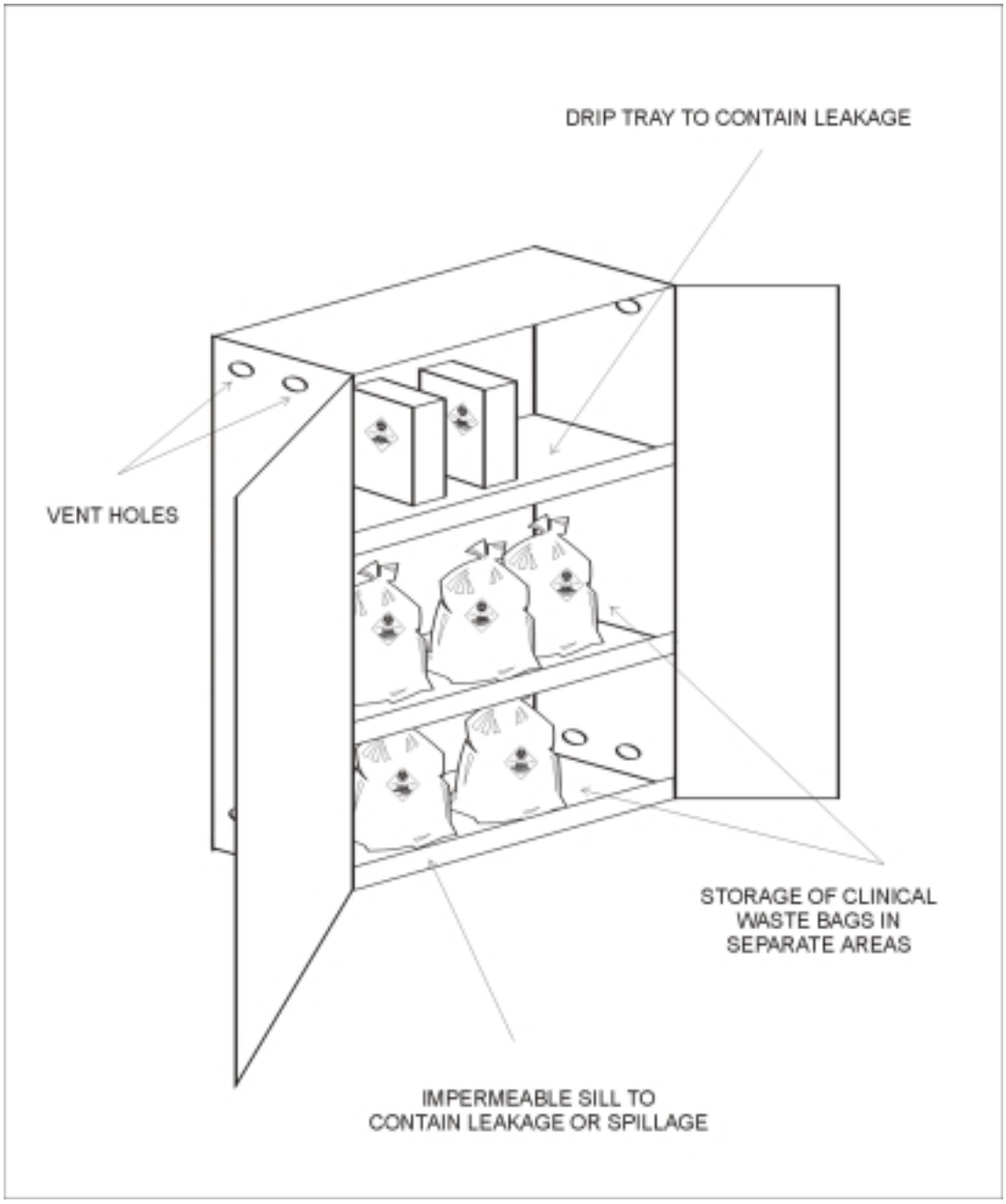

Figure 4: Schematic Drawing of a Clinical Waste Storage Cabinet.

5.2.4 Other Requirements

- Storage facilities should be kept locked at all times, except for loading and unloading of clinical waste by authorised personnel.

- Where containers of any clinical waste in liquid form are stored, the facility should be designed to be capable of containing any spillage of clinical waste.
- Packaged clinical waste must not be compacted to avoid damaging the packing when placed in the storage facilities.

- Stacking of bagged clinical waste should be avoided as far as possible to avoid damage to the bags.

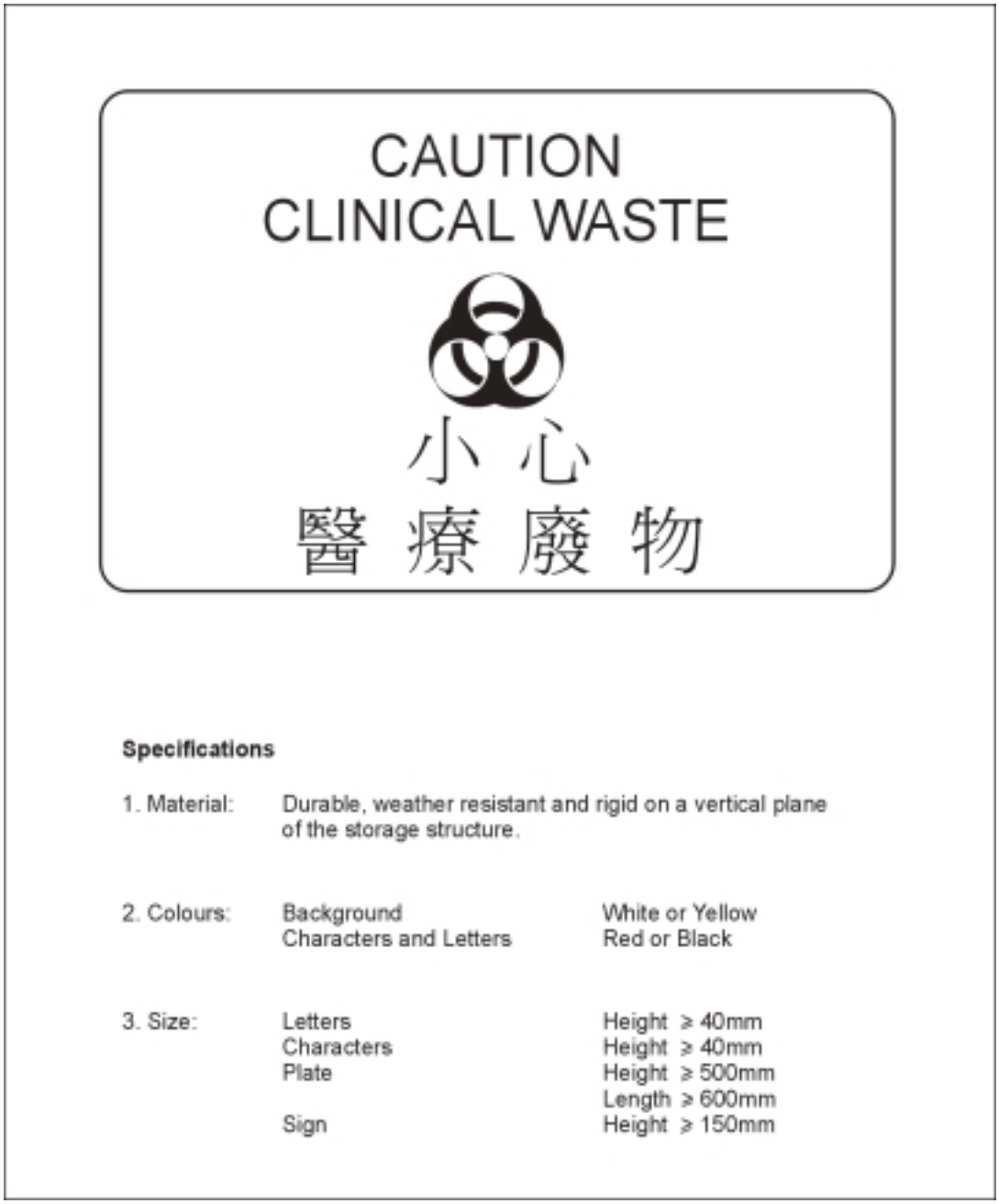

Figure 5: Warning Sign at Storage Facilities.

5.2.5 Authorized Collection Point

- Some hospitals may wish to provide temporary storage facilities as "collection points" for small clinical waste producers (e.g. private doctors) so that the small waste producers may carry the waste to the collection points for collection by licensed waste collectors. The hospitals should obtain authorization from the Authority for operating a collection point. The setting up of collection points will be subject to such conditions that risk to the environment and the public health is minimized. Small producers should properly pack and label the clinical waste before delivery to the collection point.

6. MANAGEMENT SYSTEM FOR WASTE PRODUCERS

- To facilitate compliance with the requirements of this Code and the *duty of care* responsibility, a major clinical waste producer should develop a management system comprising the following elements:

  - development of a *Clinical Waste Management Plan* to set out the policy for reference by staff; and

  - identification of a responsible person for co-ordinating the various activities relating to clinical waste management. The responsible person should be suitably experienced and have appropriate training. He/She should have sufficient authority to carry out the task of maintaining the necessary standards of safety and good practice for clinical waste management. He/She should have responsibility for all aspects of clinical waste management and may delegate the responsibilities for day-to-day clinical waste management operations to other trained staff.

6.1 Clinical Waste Management Plan

- The *Clinical Waste Management Plan* should address the following areas:

  - identification of all sources where clinical waste is generated and the types of waste materials;

  - identification of persons responsible for each element of the clinical waste management system and chains of authority, including names, contact addresses and telephone numbers;

  - operational and maintenance procedures and plans for items or equipment used for clinical waste management (e.g. containers, storage areas, transport equipment, safety equipment);

  - procedures for all activities involving clinical waste management, such as the sealing and labelling of packaging, movement of clinical waste packages, storage, transport, etc;

  - training programme for all relevant staff;

  - health and safety procedures, including contingency arrangements and appropriate first-aid measures in the event of accidents or emergencies involving clinical waste such as the procedures for dealing with needle stick injuries; and

  - documentation and record keeping, including receipts from waste collectors, and staff records, e.g. training, accident records, etc.

- Each Plan should be designed to reflect the application of safe clinical waste management practices in the local situation and with due regard to the operations carried out. A Proposed Outline of a *Clinical Waste Management Plan* is given in Annex C.
- Contents of the *Clinical Waste Management Plan* should be kept up-to-date.

6.2 Record Keeping

- Clinical waste producers should keep records of the quantities of clinical waste they produce, and the frequency and time of collection by waste collectors. The quantity and collection time for *Group 3* clinical waste should be recorded separately.

- Clinical waste collectors and operators of the disposal facilities are required to record and certify on a trip ticket the quantities of clinical waste collected by the collectors, the quantities delivered to the disposal facility and other information required for keeping track of the waste movement. The waste collectors have to provide a copy of the trip ticket to the waste producers for record. The waste producers are recommended to check the information recorded on the trip ticket prior to handing over the waste to the waste collector. An example of the trip ticket may be found in the booklet *A Guide to the Clinical Waste Control Scheme.*

- Waste producers are recommended to keep copies of the trip tickets for a period of not less than 12 months and present to the copies to the Authority for inspection upon request. Waste collectors and operators of disposal facilities are required to do so under the licence conditions. Waste producers should inform the Authority if they notice any discrepancy between their own record of trip tickets and those records provided to them by the operator of the waste disposal facilities or the Authority.

7. COLLECTION AND TRANSPORTATION OF CLINICAL WASTE

7.1 Collection Service

- Clinical waste stored in on-site storage facilities shall be collected by licensed clinical waste collectors for transport to a licensed disposal facility.

- Transfer of clinical waste packages or containers from one transit skip to another is strictly prohibited.

- *Group 3* clinical waste (human and animal tissues) should be contained in dedicated transit skips without mixing with other groups of clinical waste during collection and transportation to the disposal facility.

7.2 Control of Clinical Waste Collection

- Collection, removal and transportation of the clinical waste by the clinical waste collectors shall be conducted according to the requirements specified in the collection licence.

- Containers or transit skips of clinical waste must be securely sealed and properly labelled according to the guidance given in this Code of Practice before they are collected. Clinical waste collectors should NOT collect containers or transit skips (as the case may be) of clinical waste which have NOT been sealed and labelled properly.

7.3 Frequency of Collection

- The frequency of collection should be agreed between the waste producer and the collector with due account of the nature and quantity of clinical waste. In order to minimise potential health hazards, the storage period for clinical waste should be as short as practicable prior to disposal. Guidelines on the collection frequency for the different groups of clinical waste are set out in Table 2.

Groups of Waste	Collection Frequency[1]
Group 1 (sharps)	Once every 2 weeks
Group 2 (laboratory waste) *Group 4* (infectious materials) *Group 5* (dressings)	Daily
Group 3 (human/animal tissues)	Daily Up to 10 days if stored below 5^{o}C Monthly if stored below 0^{o}C
Group 6 (other waste)	To coincide with the collection of other groups of clinical waste or once every month.

Note: (1) At places where waste accumulates in very small quantities, a lower collection frequency may be acceptable.

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

- At places where *Group 1* waste accumulates in very small quantities, longer intervals between collection of the sealed sharps boxes are acceptable.

- At places where *Groups 2, 4 and 5* waste accumulate in very small quantities, longer intervals between collection of the sealed containers, up to a maximum of 1 week, are acceptable.

- The frequency of collection of *Groups 6* waste should tie in with the schedule of collection of other groups of clinical waste.

- Waste collectors should maintain empty transit skips in a clean and sanitary state, and in good conditions. Adequate number of empty transit skips should be supplied to the waste producers in a timely manner.

7.4 Transportation of Clinical Waste

7.4.1 Transit Skips

- The specification of the transit skips should meet the requirements of mechanical handling equipment of the transport vehicles and at the disposal facility. The skips should bear lettering of a minimum height of 40mm in BLACK stating, for all Groups of clinical waste other than *Group* 3, "CLINICAL WASTE" in English and "醫療廢物" in Chinese, and, for *Group* 3 clinical waste, “Clinical Waste for Refrigeration” in English and “冷藏醫療廢物” in Chinese, and the international bio-hazard sign as indicated in Figure 2 of a minimum height of 240mm in black. Each skip should have a unique serial number which will be displayed in prominent BLACK figures and/or letters on the skip for easy identification and recording purpose. Transit skips containing *Group* 3 clinical waste should be clearly identifiable (e.g. yellow colour or a special label to be printed or attached).

- The transit skips should meet the following requirements:

  - dedicated for the purpose of storing packaged clinical waste and should not be used for any other purpose;

  - 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 cleaning.

■ The covers of transit skips must be closed and fastened at all times except during loading or unloading of clinical waste containers.

7.4.2 Loading of Transit Skips

■ The manual loading of clinical waste at, or from, the place of storage into a transit skip must be performed with care. Staff involved in loading clinical waste should:

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

■ The collector should ensure that the covers of all skips are securely closed and fastened before loading onto the transport vehicle. The vehicle should be parked in a safe manner and the hand-brake of the vehicle should be applied before the transit skips are loaded into or unloaded from the vehicle. The door of the cargo compartment of the vehicle should be securely locked at all times except during loading or unloading.

7.4.3 Transportation Vehicle/Vessel

■ Transportation of transit skips must be undertaken only when the covers of the skips are securely closed and fastened. All transit skips whether containing waste or not should be sufficiently secured against movement inside the vehicle to avoid skidding or falling during transport.

■ Transportation by road vehicles must be undertaken only by dedicated vehicles in accordance with the licence conditions. Compaction vehicles, dump trucks, grab mounted vehicles and crane lorries must not be used for the transportation of clinical waste. Vehicles employed for transportation of clinical waste should have the following features:

- equipped with mechanical handling equipment to enable the skips to be on- and off-loaded with minimal manual effort and contact with transit skips;
- capable of providing secure retention of the transit skips when travelling, and maintaining skips in a good sanitary condition;
- comprise either a fully enclosed box van or 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;
- cargo compartment provided with adequate lighting and ventilation, lockable doors, be spillage-proof and capable of being hygienically cleaned and disinfected;

- equipped with a tool kit for minor repairs;

- equipped with sufficient safety gears, decontamination and cleaning equipment and materials to enable the operating crew to deal with spillage (e.g. personal protective clothing, empty plastic bags and sharps boxes, disinfectants, absorbent granules, brushes, mops, plastic shovels and buckets, etc) (see Annex B); and

- equipped with equipment such as mobile telephone to facilitate communication with the disposal facility operator and the Authority (Note: Drivers must not use hand-held mobile phone while driving to avoid distraction).

■ Proper warning panels should be displayed at the front and rear of all vehicles to indicate the carriage of clinical waste (details in Annex D).

■ At least one portable fire extinguisher with a minimum capacity of 2 kg of dry power, or other suitable extinguisher with an equivalent test fire rating of at least 5A and 34B as defined in *British Standard BSEN 3-1:1996*, should be provided for the vehicle in an easily accessible position.

■ The vehicle employed to collect, remove or transport clinical waste should be:

- clean, maintained in sound condition and roadworthy;

- thoroughly cleaned and disinfected immediately following any internal spillage or before leaving the disposal facility if contaminated with any waste, or in any case no less frequent than once per week;

- prohibited from carrying food or pharmaceutical products or any materials which requires good sanitary conditions; and

- prohibited from carrying any material other than clinical waste unless previously cleaned and disinfected.

■ 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 position such as an open space separated from public roads and from dwellings where the public does not normally pass or assemble.

■ Any marine vessel used for the transport of skips must be equipped with storage facilities to secure the skips or containers and must be provided with facilities to enable the embarkation and disembarkation of the skips in a safe and secure manner. The marine vessel should have similar features as for transportation vehicles subject to necessary modifications.

■ The transportation of clinical waste should be accompanied by at least one trained operational personnel to handle the waste safely and properly. NO passenger should be in the cargo or storage compartment of the vehicle during transportation. NO person is permitted to smoke, eat or drink during the collection, removal, transportation and disposal of clinical waste.

7.4.4 Delivery of Clinical Waste to a Licensed Disposal Facility

■ Once clinical waste is collected from waste producers and carried by a transport vehicle, the waste should stay in the same vehicle until it is delivered to a licensed disposal facility. Transferring clinical waste from one transport vehicle to another should be avoided unless it is absolutely necessary to transfer clinical waste from vessels to vehicles (or vice versa)

during the transportation of clinical waste from outlying islands, or in the event of accidents or emergencies, or otherwise authorized.

- Clinical waste collected from waste producers should be transferred to a facility licensed by the Authority for disposal as soon as reasonably practicable, and under normal circumstances on the same day the waste is collected from waste producers. Temporary storage of the collected clinical waste, particularly *Group* 3 waste, in any storage area should be avoided. If temporary storage of clinical waste is unavoidable, the waste collector is required to inform the Authority as soon as practicable by the quickest means. The waste collector should maintain the waste in sanitary conditions, and prevent access by the public. If *Group* 3 waste requires storage overnight, it should be refrigerated below 5^{o}C. The collector should send the temporarily stored clinical waste to a licensed reception point for disposal as soon as practicable and inform the Authority thereafter in writing. The collector should also enter on separate records such particulars as quantity of the waste, the date of collection, date of informing the Authority, reason for delivery to the reception point later than 24 hours after collection and the particulars and manner in which such waste was stored prior to the delivery to the reception point.

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

- Clinical waste collectors should fully co-operate with and follow any instruction given by the waste disposal facility operator in relation to checking the packaging, unloading the waste, obtaining samples for analysis and recording any consignment.

7.4.5 Carrying of Clinical Waste by Healthcare Professionals

- Healthcare professionals (including registered medical practitioners, dentists, veterinary surgeons, registered or listed Chinese medicine practitioners, and registered or enrolled nurses) may transport their clinical waste to an authorized collection point or a licensed disposal facility themselves. Under these circumstances, they are not required to comply with the licensing and the trip ticket requirements for clinical waste collection under the Waste Disposal Ordinance. However, they are subject to the following conditions:
  - Carry not more than 5 kg of clinical waste at any one time;
  - Do not use any public bus, public light bus, Mass Transit Railway, train, light rail vehicle, Peak Tram, tram, bicycle or motor cycle; and
  - Do not carry any *Group* 4 waste.

- The healthcare professionals should properly pack and label the clinical waste before they transport their own waste from their premises. The containers must meet the specifications in Annex A and bear the biohazard sign in Figure 2. They should also carry appropriate first-aid and spillage kits (e.g. spare red bags and sharps box) for handling spillage.

- Healthcare professionals who are not required to comply with the licensing and trip ticket requirements for clinical waste collection should keep records of their clinical waste disposal and retain the receipt from authorized collection points or the licenced disposal facility for a period of 12 months for inspection upon request by the Director of Environmental Protection.

8. SAFETY AND EMERGENCY RESPONSE PROCEDURES

■ All clinical waste producers, collectors and operators of clinical waste disposal facilities should make the necessary arrangements and provide adequate supervision to prevent any danger or injury arising from the handling of clinical waste.

8.1 General Requirements

■ Workers handling clinical waste should be trained.

■ 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 the storage facility 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 in the clinical waste storage or disposal facilities and during handling of clinical waste. Warning signs indicating "NO SMOKING, NO EATING AND DRINKING" should be posted at the storage and disposal facilities.

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

8.2 Safety Equipment and Training

■ The employers should ensure that all employees involved in handling clinical waste are provided with adequate safety information, protective equipment and training in the handling of clinical waste.

■ All staff who may be required to handle or move clinical waste containers should be trained to:

- follow safety procedures and wear adequate protective gears before handling clinical waste (see Annex B);
- check that the waste containers are effectively sealed;
- check that the waste containers are appropriately labelled;
- handle plastic bags by the neck only;
- avoid damaging the packaging;
- keep segregated categories of clinical waste separate;
- handle accidental spillage of clinical waste;
- check that seals of storage containers are unbroken when movement is completed;
- have knowledge on the problems and the precautions in dealing with special types of clinical waste (e.g. sharps, infectious waste, etc.), including the procedures for dealing with needle stick injury or mucosal contact with blood or body fluids (see Annex B); and

- observe personal hygiene practices, e.g. avoid hand or equipment in contact with eye, nose or mouth, leaning or sitting on waste containers, and wash hand before leaving the clinic or before eating, drinking and smoking.

8.3 Emergency Procedures

- In the event of spillage of clinical waste, only suitably trained staff should undertake the clean-up operation, and absorbent materials, disinfection chemicals, protective clothing, masks, eye protection, gloves should be used as appropriate (see Annex B).

- All spillage incidents, or cuts, abrasions and other injuries sustained during the handling of clinical waste should be recorded and reported to the responsible person.

- All materials arising from the cleaning up of the spilled clinical waste should be packed into suitable containers with proper labels and disposed of as clinical waste.

- Follow-up investigation of the incident should be conducted so that improvement measures can be taken to avoid recurrence in the future.

8.4 Safety Measures and Emergency Response for Transportation of Clinical Waste

- All vehicles and vessels used for the transport of clinical waste must be equipped with adequate personal protective equipment, decontamination and cleaning equipment and materials to enable the operating crew to deal with spillage.

- Emergency document written in both Chinese and English should be made available for reference at all times. The information stated therein should include the risks associated with different types of clinical waste and actions to be taken in an emergency including the requirement on personal protective equipment and relevant contact telephone numbers for dealing with spillage.

- In case of any event of emergencies due to spillage or leakage of clinical waste from any part of the vehicle during transportation of such waste, the clinical waste collector should stop, as far as reasonably practicable, the source or cause of spillage or leakage, and contain and clean up the spillage or leakage promptly. The area affected by the spilled or leaked clinical waste should be properly disinfected and cleaned up. Any material arising from such clean-up operations should be handled as clinical waste and should be packaged and disposed of properly to the satisfaction of the Authority. If major spillage occurs which poses a significant risk to the public, assistance from the emergency services such as the Fire Services Department and the Hong Kong Police Force should be sought as soon as possible.

- If an incident occurs involving the spillage or leakage of clinical waste, the Enforcement Authority and/or emergency services may be informed in accordance with the criteria given in Table 3.

Category	Definition	Notification
Minor	Any incident involving the spillage or leakage of any clinical waste which may come into contact with the person(s) handling it at the time.	Record the details of the incident, the measures taken to clean up the spillage and the action taken to prevent a recurrence of the incident. Maintain record for at least one year.
Significant	Any incident involving the spillage or leakage of any clinical waste in which there is danger of the general public coming into contact with the waste, or involving the spillage or leakage of *Group 3* clinical waste.	Contact the Enforcement Authority by telephone as soon as practicable and, or the latest, within 24 hours of the incident and in writing within 7 days to provide the information specified above. Keep record of the incident for at least one year.
Major	Any incident involving persons handling the waste or the general public coming into contact with any clinical waste, or involving the spillage or leakage of *Group 4* clinical waste.	Immediately contact the appropriate emergency services (e.g. ambulance, fire and police) followed by the Enforcement Authority giving details of the incident. Provide written details as specified above within 48 hours and any further information as requested by the Enforcement Authority. Keep record of the incident for at least one year.

Table 3: Notification to be given in the Event of Incidents Involving Clinical Waste.

9. ENQUIRIES

- Any enquiry concerning this Code or Practice or the Regulation may be addressed to: Waste Policy & Services Group, Environmental Protection Department, 28th Floor, Southorn Centre, 130 Hennessy Road, Wan Chai, Hong Kong. (Fax: 2318 1877)

Annex A

Specifications for Different Types of Containers

(1) Sharps box

■ Sharps box must meet the following specification:

- conforms with *British Standard BS 7320 (1990)* or similar specification for sharps containers intended to hold potentially infectious clinical waste;
- capable of being sealed;
- provided with a handle that is not part of the closure device;
- proof against spillage of its contents;
- proof against puncture by clinical waste materials, such as broken glass or syringes;
- capable of withstanding one-metre vertical drop to a concrete floor without fracture, puncture or loss of contents;
- legibly marked with a horizontal line to indicate when the sharps box is filled to between 70% to 80% of its maximum volume;
- 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

■ Plastic bags must meet the following specification:

- with a maximum nominal capacity of 0.1 m^3;
- of minimum gauge of 150 microns if low density polyethylene, or 75 microns if high density polyethylene or polypropylene;
- of suitable size and shape to fit the carrier which will support the bag in use;
- coloured in red (clinical waste other than *Group* 3 waste) or yellow (for *Group* 3 waste); and
- capable of being marked by indelible ink and securely attached by labels.

(3) Plastic or Fibre Drum

■ Drums of rigid moulded plastic or fibre must meet the following specification:

- capable of being sealed;
- proof against spillage of their contents;
- coloured in red or yellow (for *Group* 3 waste); and
- capable of being marked by indelible ink and securely attached by labels.

Annex B

Safety Equipment and Procedures for Handling Clinical Waste and Dealing with Emergency and Spillage

1. Personal Safety and Protective Gears

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

2. Equipment

Fire extinguishers
Absorbent materials such as vermiculite or sawdust
Disinfectants
Plastic bags, empty drums and sharps boxes
Paper tissues and towelling
Dustpans and brushes
Mops and buckets
Scoops
Tweezers or forceps
Suitable sampling devices

3. General Precautions

- Disposable gloves and apron should be worn to minimise 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 should be worn when handling clinical waste containers. Sharps boxes should be picked up and carried by the handle provided. The other hand should NOT be used to support the bottom of the box.

- Sturdy shoes or plastic boots should be worn to protect the feet against the risk of containers being accidentally dropped. The soles of such shoes or boots will also offer some protection in the storage area, as a precaution against the spillage of sharps and where floors may become slippery.

- An industrial apron or leg protectors may need to be worn if the handling method presents a risk of bodily contact with the waste.

4. Procedures for Needle Stick Injuries

- Bleeding of the wound should be encouraged and the area should be washed with soap under running water. The wound should be disinfected and dressed.

- Report the incident to the supervisor or a responsible person and then seek medical advice and treatment or attend Accident and Emergency Department of a hospital as required.

- If possible, the sharps/hypodermic should be retained for investigation.

Annex C

Proposed Outline of a *Clinical Waste Management Plan*

STRUCTURE FOR A CLINICAL WASTE MANAGEMENT PLAN

1 STAFF RESPONSIBILITIES UNDER THE LAW

2 DEFINITION OF CLINICAL WASTE
2.1 Clinical Waste
2.2 Non-clinical Waste
2.3 Others

3. SEGREGATION PRACTICES
3.1 Clinical Waste from Non-clinical Waste
3.2 Types of Clinical Waste and Segregation Arrangement

4. PACKAGING
4.1 Bags and Bag-holders
4.2 Sharps Boxes
4.3 Plastic/fibre Drums

5. SEALING AND LABELLING
5.1 Ties
5.2 Labels

6. INTERNAL COLLECTION SYSTEM
6.1 Collection Method
6.2 Collection Frequency

7. HANDLING OF CLINICAL WASTE

8. STORAGE OF CLINICAL WASTE PRIOR TO DISPOSAL

9. ADMINISTRATIVE PROCEDURES AND RECORD KEEPING
9.1 Record of Waste Generation and Collection

10. EMERGENCY PROCEDURES
10.1 Spillage
10.2 Fire
10.3 Personal Injury
10.4 Record of Incident and Investigation

Annex D

Notes on 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
- ***Retro reflective material :*** Class 2, BS 873
- ***Colour :*** The colour of the sign face sheet material, sign face material or finish shall be as follow:
  - Border - Black
  - Background - Yellow
  - Character, Letters - Black
- All sign face sheet material, sign face material, edge sealant, clear coat lacquers and silk screen inks used shall be mutually compatible.
- ***Size :*** English Letters and Chinese Characters ≥ 40 mm in height
  Plate (Version A): Height ≥ 300 mm; Width ≥ 800 mm
  Plate (Version B): Height ≥ 400 mm; Width ≥ 550 mm

Version A

CAUTION: CLINICAL WASTE
小心　醫療廢物

Version B

CAUTION
CLINICAL WASTE
小 心
醫療廢物