

CODE OF PRACTICE ON THE HANDLING, TRANSPORTATION AND DISPOSAL OF POLYCHLORINATED BIPHENYL WASTE

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



**Environmental Protection Department
Hong Kong**

PREFACE

Polychlorinated biphenyls (PCBs) were used extensively in the past as dielectric fluids for applications in electrical capacitors and transformers. Increasing concern over their health hazards and adverse environmental effects has resulted in their diminishing use and gradual replacement, and in some countries a complete ban. Under the Waste Disposal (Chemical Waste) (General) Regulation, polychlorinated biphenyl waste is classifiable as chemical waste and its handling, collection, transportation and disposal is controlled by the legislation. This code gives guidance to persons who may come into contact with polychlorinated biphenyl waste on its safe handling and how they can comply with the legislative controls.

This Code of practice is a statutory document. It was first published in December 1992 by the Secretary for Planning, Environment and Lands under Section 35 of the Waste Disposal Ordinance after consultation with the Environmental Pollution Advisory Committee. The purpose of this Code of practice is to provide guidance and advice on the collection, storage, treatment, transportation and disposal of waste. It is not legally binding, but compliance with the Code could be employed as evidence of good practice in the course of a legal defence.

Enquiries concerning this Code of Practice may be addressed to the Environmental Protection Department at :

Address

Environmental Protection Department
28/F, Southorn Centre
130 Hennessy Road, Wanchai, Hong Kong.

Telephone : 2838 3111

E-mail : enquiry@epd.gov.hk

CONTENTS

	Page		Page
1. INTRODUCTION	4	APPENDICES	
2. TYPES OF WASTE.....	5	Appendix A Trade Names for PCBs	13
3. REGISTRATION OF WASTE PRODUCERS	6	Appendix B Approved Containers and Labelling for PCB Waste	14
4. LICENSING OF WASTE COLLECTORS	6	Appendix C Contact Names, Addresses and Telephone Numbers	16
5. PACKAGING, LABELLING AND HANDLING OF PCB WASTE.....	6	Appendix D Approved Vehicles and Hazard Warning Panel for PCB Waste.....	17
6. DECONTAMINATION OF PCB ARTICLES	7	Appendix E Notification Form	19
7. STORAGE OF PCB WASTE	7		
8. TRANSPORT TO THE DISPOSAL SITE.....	8		
9. DISPOSAL	9		
10. TRIP TICKET SYSTEM.....	10		
11. SAFETY EQUIPMENT AND PROCEDURES.....	10		

1. INTRODUCTION

■ Polychlorinated biphenyls (PCBs) are derivatives of the organic compound biphenyl in which two or more hydrogen atoms have been substituted by chlorine atoms. They are not naturally occurring compounds but are synthesized for various commercial uses. They are ideal dielectric fluids for applications in electrical capacitors and in high performance electrical transformers because of their outstanding physical and chemical properties, namely thermal stability, non-flammability, resistance to oxidation, acids, bases and many chemical agents as well as excellent electrical insulating and heat transfer properties. Other applications include heat transfer and hydraulic fluids, lubricants and vacuum pump fluids, plasticizer in sealants, adhesives, carbonless copying paper, paints, varnishes and other coatings. Appendix A gives a list of trade names under which they are or have been marketed.

■ The extensive use of PCBs combined with an initial lack of recognition of their health hazards and adverse environmental effects in the early days have led to the ubiquitous distribution of PCBs throughout the environment. Some of the desirable properties of PCBs such as their stability and non-biodegradability have turned out to be undesirable from an environmental standpoint, as could be shown by the persistence of the chemical in the environment and their bioaccumulation in the food chain. This in turn would have far reaching consequences such as the damage to the marine ecosystem due to their toxic effects on aquatic organisms, and the increase in morbidity due to their chronic toxicity to man. Direct exposure to PCBs such as inhalation and skin contact could lead to serious headaches, drowsiness and skin irritation. Increasing concern over health risks posed by PCBs and their undesirable environmental effects has resulted in the banning of the manufacture, processing, distribution in commerce and the use of PCBs except in sealed electrical equipment. For most applications, PCBs have been replaced by safer substitutes, such as silicones, synthetic hydrocarbons, and ester-based materials.

■ In Hong Kong, replacement of transformers and capacitors containing PCBs is normally practised. If difficulty is encountered in replacing the transformers, retrofitting will be carried out in which the PCB fluids are pumped out of the transformers, which are then flushed with a suitable solvent before being filled with a safer replacement fluid. Retrofitting operations should only be carried out by experienced and well equipped specialists and only if the technical difficulty in replacing the equipment cannot be easily overcome. With the wider recognition of the potential hazards associated with PCBs, the use of PCB equipment is diminishing. However, PCB wastes will continue to be produced for many years from the gradual replacement of existing PCB equipment and retrofitted equipment.

■ PCB waste is classified as a chemical waste under the Waste Disposal (Chemical Waste) (General) Regulation (the Regulation) made under the Waste Disposal Ordinance (Laws of Hong Kong Chapter 354). The legislative controls include controls on the packaging, labelling, storage, collection and disposal of chemical wastes. This Code of Practice is primarily prepared for utility companies, owners and users of PCB equipment as well as waste collectors, to advise them on the safe handling, transportation and disposal of PCB waste including PCB contaminated equipment and materials. The advice and guidance given herein are to be followed by all personnel who may come into contact with PCBs with a view to protecting the individual as well as the public and the environment from the adverse effects associated with PCBs.

2. TYPES OF WASTE

- For the purpose of this Code of Practice, PCB waste is classified as follows-

Type 1

Liquid wastes include PCB-based dielectric fluids removed from transformers and other equipment, PCB-based heat transfer and hydraulic fluids, PCB-contaminated solvents; washings of PCB-contaminated materials; and leakages, spillages and splashes of PCB-based fluids due to mishandling or accidents. Fluids removed from retrofilled transformers should be regarded as Type 1 waste if the PCB concentration in the fluids exceeds 50 ppm

Type 2

Combustible solid wastes include material used in cleaning PCB equipment or absorbing the spillages such as rags, sawdust; contaminated clothing, gloves and gaskets, etc.

Type 3

Non-combustible solid waste include redundant PCB equipment such as capacitors, transformers, switchgears, circuit breakers, heat transfer systems etc.; and contaminated components removed from such equipment such as windings; PCB-contaminated containers and equipment such as metal drums, tanks, pumps and metal filters etc. Scrap transformers retrofilled with substitute fluids should be regarded as Type 3 waste if the PCB concentration in the fluid exceeds 50 ppm

- Wastes which may contain PCBs should be treated as hazardous unless and until laboratory tests prove their absence. A simple test to differentiate PCBs from mineral oil is to make use of their difference in density. PCBs are heavier than water whereas mineral oils are lighter. For equipment and products with proper nameplates, the presence of PCBs could be easily verified by checking whether any of the trade names shown in Appendix A appears on the nameplates. If identification by trade names is not possible, the

supplier or manufacturer should be contacted for details, or arrangement could be made with a qualified laboratory to undertake analysis. If the concentration of PCBs in the product or the waste is greater than 0.005% by weight (50 ppm), then the waste should be regarded as PCB waste. As PCBs decompose thermally to dioxins and dibenzofurans which are extremely toxic, care should be taken in collecting samples for analysis and the samples should be stored in a fire resistant room with a fixed fire suppression system. Further advice on PCB analysis may be obtained from the Environmental Protection Department (EPD) at the address given in the Preface.

- Capacitors are hermetically sealed to reduce leakage risk and thus, cannot be tested to verify their contents. Most electrical capacitors manufactured since the 1930s were, however, filled with PCB liquids. It should be assumed therefore that all power capacitors regardless of size or use contain PCBs except where alternative (non-PCB) liquids are clearly indicated on the nameplate.

- Small PCB capacitors have also been used in the starter units of fluorescent lights and fractional horse-power motors of the type used in domestic and light-industrial electrical equipment. Typically they contain about 50g of the lower chlorinated PCBs, mostly absorbed in the windings. They normally carry no label identifying the PCB content, and they are usually disposed of as part of the redundant appliances at landfill sites. No special precautions need to be taken in the disposal of small capacitors unless the landfill operator advises that there is undue concentration at the landfill site. However, if sufficient quantities are located, they should be handled in the same manner as the larger electrical capacitors but need not be packaged as carefully because they contain no free fluids. It is understood that non-PCB materials are gaining wider use in capacitors for fluorescent light fittings, and the use of capacitor start motors in domestic appliances is diminishing due to design changes.

3. REGISTRATION OF WASTE PRODUCERS

■ Under the Regulation, PCB waste is classified as chemical waste. Any person who produces or causes to be produced PCB waste is required to register with EPD as a chemical waste producer. Any chemical waste producer who fails to comply with the registration requirement commits an offence. A waste producer who intends to dispose of any PCB waste including old PCB equipment must therefore register with EPD. For more details, please refer to **A Guide to the Registration of Chemical Waste Producer** published by EPD. Copies of the Guide and registration forms can be obtained from EPD.

4. LICENSING OF WASTE COLLECTORS

■ Under Section 10 of the Waste Disposal Ordinance, collectors who collect and transport PCB waste to an off-site facility for disposal have to be licensed by EPD. A registered waste producer must engage a licensed collector to transport the waste to an off-site disposal facility. Any registered waste producer who wishes to transport his own waste also has to be licensed. Details on the licensing requirements and the application procedures can be obtained from EPD.

5. PACKAGING, LABELLING AND HANDLING OF PCB WASTE

■ Type 1 waste should be contained in adequately sealed and well labelled new or good condition steel drums of No.16 gauge or heavier and fitted with double bung fixed ends. The drums should be clearly marked **DANGER CHEMICAL (PCB) WASTE** in both English and Chinese, together with a chemical waste label as detailed in Appendix B. The drums should never be fully filled and a 100mm air space should be allowed between the top of the drums and the level of the liquid contents.

■ Type 2 waste should be packed in heavy duty and leak-proof polythene sacks and placed into new or good condition steel drums of No.16 gauge or heavier and fitted with removable lids. The drums should be properly sealed and labelled **DANGER CHEMICAL (PCB) WASTE** in both English and Chinese, together with a chemical waste label as detailed in Appendix B.

■ Type 3 waste, excluding large capacitors and transformers, should be packed in heavy duty and leak-proof polythene sacks and placed into new or good condition removable lid steel drums of No.16 gauge or heavier. The drums should be properly sealed and labelled **DANGER CHEMICAL (PCB) WASTE** in both English and Chinese, together with a chemical waste label as detailed in Appendix B. The capacitors should be left in their cases unopened and stored with their terminals pointing upwards to prevent leakage from the capacitor bushings. The drums should be packed with non-combustible absorbent material such as vermiculite so that any leakage will be absorbed.

■ Large PCB capacitors which do not fit into drums should be inspected for leakage before packaging. If they are in poor physical condition, they should be packaged in heavy duty and leak-proof polythene sacks which should then be heat sealed. The packaged capacitors should then be stored in larger steel containers surrounded by non-combustible absorbent material such as vermiculite. Capacitors which are in good physical condition should preferably be packaged in heavy duty and leak-proof polythene sacks before being placed in larger steel containers or crated for shipment. Scrap capacitors and their containers, should be properly labelled and clearly marked **DANGER CHEMICAL (PCB) WASTE** in both English and Chinese, together with a chemical waste label as detailed in Appendix B.

■ Unwanted PCB transformers, if still in good physical condition, should be clearly marked **DANGER CHEMICAL (PCB) WASTE** in both English and Chinese, together with a chemical waste label as detailed in Appendix B, and preferably crated before shipment. If transformers with minor leakages can be properly repaired, there is no need for them to be drained of the dielectric fluid before being crated for shipment.

■ For those PCB transformers which are in poor physical condition and other types of mechanical equipment such as hydraulic pumps and their lines, heat exchangers, they should be drained of their fluids, washed out with solvent, and the equipment stored properly prior to disposal. They should also be clearly marked **DANGER CHEMICAL (PCB) WASTE CONTAMINATION** in both English and Chinese, together with a chemical waste label as detailed in Appendix B. The fluids and the washings should be handled as Type 1 waste.

■ PCB contaminated drums should never be used to store materials other than PCB wastes. They should also be properly labelled **DANGER CHEMICAL (PCB) WASTE CONTAMINATION** in both English and Chinese, together with a chemical waste label as detailed in Appendix B, and sealed prior to disposal.

6. DECONTAMINATION OF PCB ARTICLES

■ Certain Type 3 waste such as contaminated containers, contaminated components removed from PCB equipment such as windings, mechanical equipment such as pumps and heat exchangers, if generated in substantial quantities, could be subject to decontamination procedures to reduce the PCB concentration to below 50 ppm. This would then render the waste suitable for disposal at landfill sites. Decontamination procedures should be carried out in a well ventilated room provided with impermeable floors and suitable bunding to contain all spillage or leakage. Proper safety precautions must be observed while carrying out decontamination operation. Decontamination procedures require specialist expertise and such operations should only be carried out by experienced and well equipped personnel.

■ To decontaminate a PCB article, the contents should first be thoroughly drained. A solvent such as kerosene or turpentine containing less than 50 ppm PCBs should then be used to fill the article. At least 18 hours should be allowed to elapse before the article is drained. This rinsing procedure is repeated three times, and the last rinse should be checked to ensure that the PCB concentration is less than 50 ppm. Further rinses may be required to reduce the PCB

concentration to below 50 ppm. The solvent may be reused for rinsing purposes until it contains more than 50 ppm PCBs. The contaminated solvent should then be disposed of as Type 1 waste. All decontaminated articles should also be properly labelled **DANGER HAS CONTAINED CHEMICAL WASTE** in both English and Chinese.

7. STORAGE OF PCB WASTE

■ PCB waste have to be properly stored before suitable disposal arrangements are made. An indoor storage site is preferable to an outdoor one because it eliminates the danger of contaminated rainwater runoff. An ideal location would have a non-corrosive atmosphere, good ventilation, normal room temperature of 25°C or cooler, dry surfaces and impermeable floor with no drains. If an outdoor storage area is chosen, it should be located in a safe area with suitable fencing, impermeable floor should also be provided. Care must be taken to prevent corrosion of containers and vandalism, and access should be restricted to authorised personnel. No PCB waste should be stored in an outdoor location unless it is provided with a roof or a similar covering. In both cases, the area where liquid PCB waste is stored should be bunded to contain all spillage or leakage. For more details on requirement of storage area, please refer to **Code of Practice on the Packaging, Labelling, and Storage of Chemical Wastes** published by EPD.

■ Liquid PCB waste should not be allowed to enter any nullah, drain, sewer or other water courses under any circumstances. Precautions should be taken to prevent spillage and leakage and all drummed waste or unwanted equipment should be kept in bunded area adequate to contain any spillage or leakage. If spillage or leakage does occur, immediate action is required to contain the spillage of leakage by using a suitable oil absorbing material such as vermiculite or sand. PCB contaminated area should be completely clean up, with suitable solvents such as kerosene, turpentine. Such clean up operations should be carried out by experienced personnel and all waste should be disposed of as PCB waste.

■ PCB waste should be stored in compliance with the following conditions-

- Store PCB waste in suitable containers and place the containers on a pallet.
- Do not stack containers of PCB waste.
- Display proper warning panels indicating storage of PCB waste and keep doors locked for security. The sign should be clearly marked with red indelible ink against white background with the words DANAGER CHEMICAL (PCB) WASTE in English capitals and Chinese characters of at least 60mm in height (Details in Figure 1).
- Place metal drip trays under drain spouts on transformers.
- Allow aisles between containers and equipment to facilitate regular inspection.
- Keep first aid and safety equipment handy.
- Keep spill cleanup kits handy and display emergency cleanup procedures.
- Provide appropriate fire fighting equipment and install smoke detectors to warn of fire.
- Keep a record of all item entering and exiting the storage area.
- PCB waste should not be stored in the same location with flammable goods and other oils for insulating, lubricating, cooling or other purposes.

■ Advice on safety equipment and emergency procedures is set out in later sections and further advice on fire prevention measures can be obtained from the Fire Services Department at the address given in Appendix C.

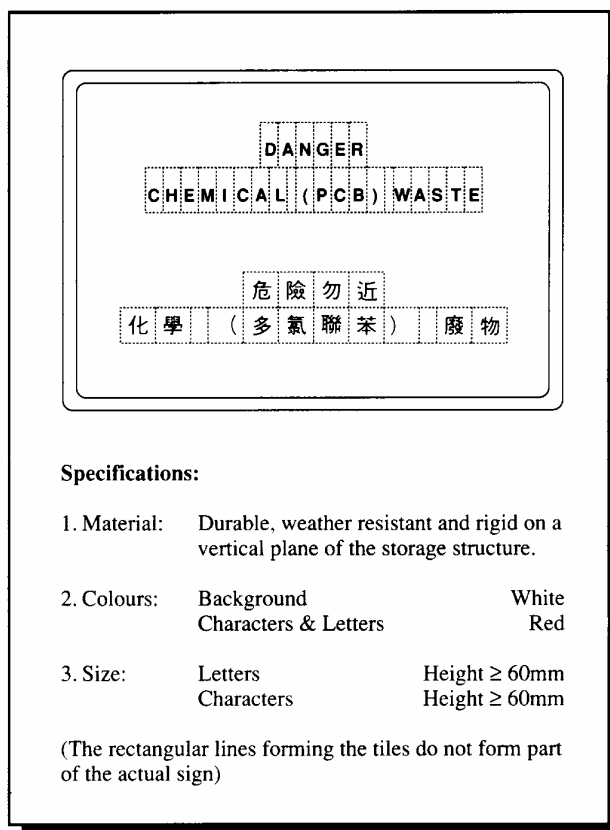


Figure 1 - Notes on the Hazard Warning Panel for Storage Area

8. TRANSPORT TO THE DISPOSAL SITE

■ PCB waste should be transported by vehicles in good condition under the supervision of experienced personnel and in compliance with the following conditions-

- All loading and unloading operations should be carried out with care to avoid any damage which results in leakage and spillage.
- The drums or the unwanted equipment must be clearly marked DANAGER CHEMICAL (PCB) WASTE in both English and Chinese, together with a chemical waste label as detailed in Appendix B.

- The drums or the unwanted equipment must be loaded and fastened securely so that they are in an upright position and do not move about or fall off the vehicle. Drain spouts, cooling tubes and the bushings of the transformers should be adequately protected to avoid damage during transport.
 - Vehicles should have high fencing on both sides, and preferably have a canopy.
 - Vehicles should have hazard warning panels clearly marked with black indelible ink against yellow retro-reflective background DANGER CHEMICAL (PCB) WASTE in English capitals and Chinese characters (Details in Appendix D). The panels should be displayed at the front and rear of the vehicle in a position that does not conceal any lights, licence plates or other legally required signs or markings.
 - Vehicles must be equipped with safety equipment, including an appropriate fire extinguisher for emergency use, and a spill cleanup kit consisting of a shovel, absorbent material and spare drums.
 - The complete load should be covered with a tarpaulin to prevent rainwater from contact with the drums or the equipment. Suitable bunding could be provided by placing sand bags around the cargoes.
 - Vehicles should not carry any passenger or any flammable dangerous goods in the cargo compartment.
- Diagrams showing the types of vehicles suitable for transporting PCB waste and the hazard warning panels are shown in Appendix D. The requirements for safety equipment and emergency procedures are set out in later sections. Further advice on the requirements of vehicles can be obtained from the Fire Services Department at the address given in Appendix C.

9. DISPOSAL

- The recommended method of safe disposal of PCBs is by incineration at temperature above 1,100°C with a mean residence time of 2 seconds and a minimum excess oxygen content of 3%. Arrangements could either be made with the Chemical Waste Treatment Facility or experienced overseas waste disposal contractors for the disposal of PCB waste. Prior approval from EPD should be sought for the export of PCB waste to overseas facilities for disposal.
- The waste producer has to notify EPD for the disposal of PCB waste, since PCBs are listed in Part A of Schedule 1 to the Regulation. Notification should be made on the prescribed form obtainable from EPD (Appendix E), at least 10 working days before the intended disposal operation. After processing the notification, EPD will issue specific instructions and directions on the disposal arrangements, which must be strictly followed by the waste producer or his agent.
- In normal circumstances, decontaminated PCB articles and small PCB capacitors (incorporated as a component of domestic appliances) could be accepted at landfill sites. These articles include the properly decontaminated containers and mechanical equipment such as pumps, heat exchangers, etc. Notification has to be given to EPD which will issue the appropriate directions for disposal at landfills. All unloading and placing of the waste at the landfills should be carried out in accordance with the instructions of the disposal site staff. The waste producer or his agent is required to provide labour to carry out such unloading operation.

10. TRIP TICKET SYSTEM

■ A cradle-to-grave control has been introduced under the Regulation, as a mechanism of keeping track of the movement of chemical waste from its point of arising to its final disposal site (illustrated in Figure 2). For every waste consignment, a waste producer needs to complete the trip-ticket before the waste will be accepted for collection from his premises. The waste producer has to keep one copy as a record of consignment, and the waste collector will retain a further copy of the form upon delivery of the waste to a reception point manager. The original copy will be retained by the reception point manager. Each party in the waste disposal chain has to keep the copy for at least 12 months. At each stage, the receipt of a properly completed trip-ticket is a condition for acceptance of the waste. In addition, the waste collector and reception point manager should send regular returns to EPD in the specified format as

required under the waste collection and waste disposal licences respectively. Further details of the trip ticket system can be found in **A Guide to the Chemical Waste Control Scheme** published by EPD.

11. SAFETY EQUIPMENT AND PROCEDURES

■ Safety precautions must be observed while handling PCB liquids. All operations should be done under good ventilation and no smoking is allowed. Workers who may be exposed to PCBs should be equipped with overalls, heavy duty gauntlets and protective overshoes made of PCB-resistant materials. Preference should be given to the use of disposable protective apparel because of the difficulty in decontamination of reusable clothing. Contaminated protective clothing should be promptly removed and the area of skin contaminated with PCBs should be washed immediately.

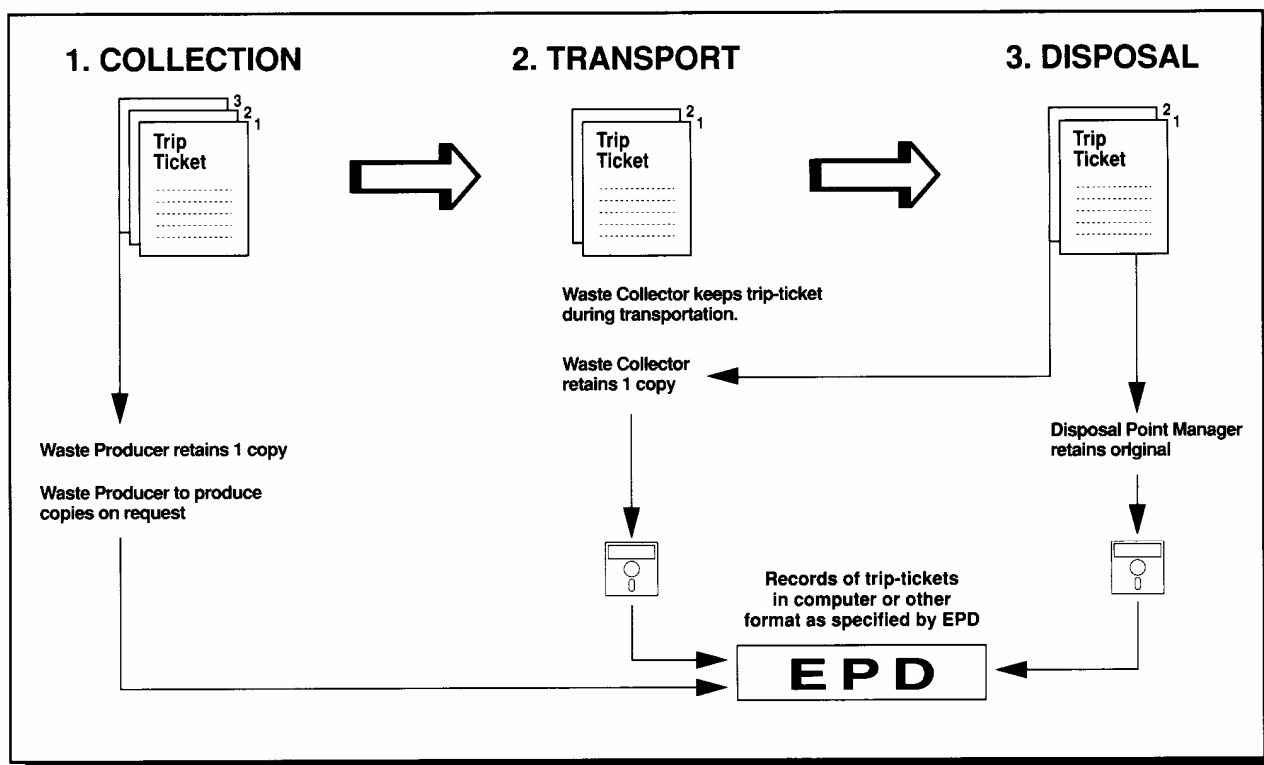


Figure 2 - The Trip-Ticket System for Tracking The Consignment of Chemical Waste

■ Respirators should be worn. For work at normal temperatures, a suitable type is a full face-piece canister gas respirator complying with BS 2091:1969, will type C or CC canister. For high temperature, or work in confined space, a self-contained breathing apparatus is needed and workers should be trained before they are allowed to use this type of breathing apparatus. If the respirators do not have eye protection, the chemical type goggles must be worn. First-aid treatment for accidental contact with PCBs is outlined in Table 1. Further advice on safety equipment and safety practices for handling PCBs inside the premises of industrial undertakings may be obtained from the Labour Department at the address given in Appendix C.

■ The consequence of environmental contamination is serious. Therefore, in the event of an accident during transport resulting in leakage from containers or PCB spillage, immediate action must be taken to restrict the contamination area by absorbing the leakage or spillage. PCBs must be prevented from entering any drain, sewer, nullah or other water

course. All resulting PCB waste should be repacked using spare containers carried on the vehicle. Damaged and leaking containers should not be reused for containing PCB waste. Personal protection should be worn for this operation. Decontamination of the area must be carried out by experienced and well equipped personnel. In incidents when the spillage/leakage may result in significant contamination of an area or risk of pollution, EPD should be informed immediately.

■ PCB liquids do not burn easily, but the vapour can be extremely irritating. Some decomposition products of PCBs are highly toxic. If there is any fire outbreak, the Fire Services Department should be contacted immediately and informed that the fire involves PCBs. Self-contained breathing apparatus and protective clothing are required for self protection. Foam or dry chemicals should be used to extinguish the fire, rather than water to minimize contaminated runoff. Further advice on fire fighting can be obtained from the Fire Services Department at the address given in Appendix C.

In case of	First Action	Second Action
PCB on skin	- Wash with soap and water for at least 15 minutes	- Seek immediate medical advice from physician
PCB in eyes	- Flush eyes with gentle stream of clean water for 15 minutes keeping eyelids apart	- Seek immediate medical advice from physician
PCB swallowed	- Press down at back of tongue to induce vomiting - Do not give victim anything to drink	- Seek immediate medical advice from physician
Strong PCB fumes inhalation	- Get victim into fresh air	- Seek immediate medical advice from physician

Table 1 - First-Aid Treatment for Accidental Contact with PCBs

APPENDICES

TRADE NAMES FOR PCBs

Principal trade names used for PCB-based dielectric fluids which are mainly applicable to transformers are as follows -

Aceclor	(Belgium)
Apirolio	(Italy)
Aroc(h)lor	(UK, USA, Japan)
Asbestol	(USA)
Askarel	(UK, USA)
Auxol	(USA)
Bakola 131	(USA)
Chlorextol	(USA)
Chlorinol	(USA)
C(h)lophen	(Germany)
Clorphen	(USA)
DK	(Italy)
Diac(h)lor	(USA)
Dykanol	(USA)
EEC-18	(USA)
Elaol	(Germany)
Electrolphenyl	(France)
Elemex	(USA)
E(d)ucarel	(USA)
Fenclor	(Italy)
Hyvol	(USA)
Inclor/Inclar	(Italy)
Inerteen	(USA, Canada)
Kan(e)c(h)lor	(Japan)
Kennechlor	(Japan)
Montar	(USA)
Nepolin	(USA)
No-Flamol	(USA)
Non-flammable liquid	(USA)
Phenoclar	(Germany)
Phenoclor	(France)
P(h)yalene	(France)
Pyranol	(USA, Canada)
Pyroclor	(UK)
Saf(e)-T-Kuhl	(USA)
Santosafe	(Japan)
Santovac	(USA)
So(1)vol/Sorol	(CIS)
Terpenylchlore	(France)

Other trade names used for PCB products in the past include -

SANTOTHERM FR (UK) Heat transfer prior to 1972

THERMINOL FR (USA) Heat transfer prior to 1972

PYDRAUL (USA) Hydraulic applications before 1972

The trade names SANTOTHERM, THERMINOL and PYDRAUL are still in use but these now refer to non-chlorinated products.

In the case of SANTOTHERM and THERMINOL only the FR series contained PCBs and present-day products are not labelled as FR. In the case of PYDRAUL, the present series of hydraulic fluids which do not contain halogenated compounds are designated B, C or E.

Numerous trade names or coding systems have been used for electrical capacitors, some of which could be the capacitor manufacturer's own trade mark or coding system. A great percentage of capacitors have no indication whatsoever of their dielectric fluid content. (In a fire it may be best to assume that a capacitor has a PCB dielectric fluid until proved otherwise.)

APPROVED CONTAINERS AND LABELLING FOR PCB WASTE

TYPE A (For Type 1 PCB Waste)

Double bung metal drums of No.16 gauge or heavier and 210 litres capacity complying with the minimum standard prescribed in British Standard for mild steel drums (light duty: fixed ends), BS 814: October, 1974.

The drums should be clearly marked with black indelible ink, against yellow background both on the top as well as on the curved surface as follows -

DANGER CHEMICAL (PCB) WASTE
 危險勿近 化學(多氯聯苯)廢物



Figure 3 - Chemical Waste Label for PCB Waste

All letters and characters must be at least 50 mm high. A label as required as shown in Figure 3 should be attached. Figure 4 shows an example of a double bung drum with markings and label.

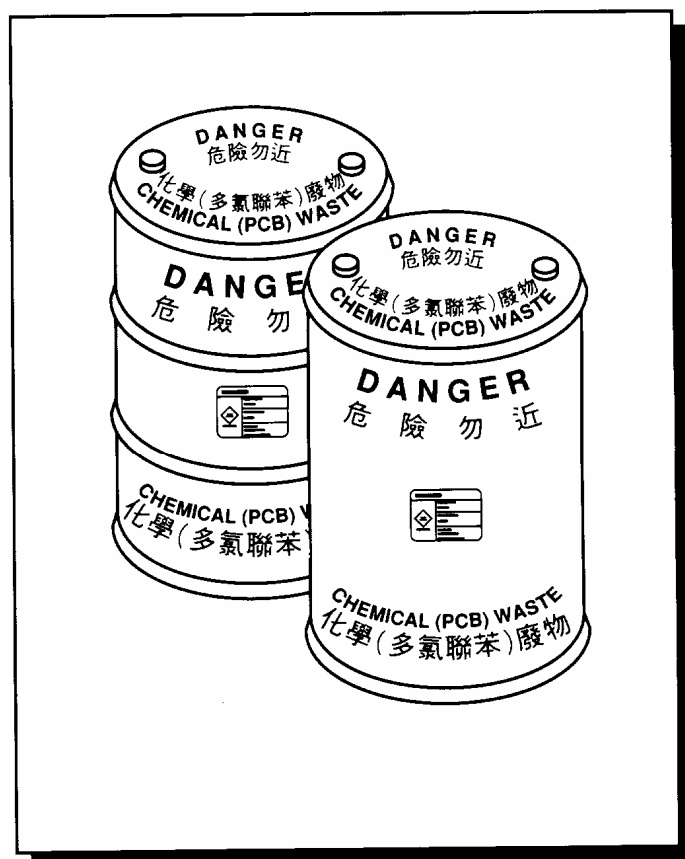


Figure 4 - Double Bung Metal Drums with Proper Labels

APPROVED CONTAINERS AND LABELLING FOR PCB WASTE

TYPE B (For Types 2 and 3 PCB Waste)

The waste have to be packed in heavy duty and leak-proof polythene sacks complying with the minimum standard prescribed in British Standard BS 4932:1973. Information on suppliers of suitable sacks is available from the EPD at the address shown in the Preface.

The packed waste should be placed in metal drums of No.16 gauge or heavier and 210 litres capacity complying with the minimum standard prescribed in British Standard for mild steel drums (light duty: removable heads), BS 2003: October 1974.

The drums are the full aperture type and should be fitted with a gasket made of PCB-resistant material. The lids may be secured with latch, lever, or nut and bolt closures. They should be marked in the same way as type A containers. A label as required as shown in Figure 3 should be attached. Figure 5 shows an example of a drum with markings and typical closures.

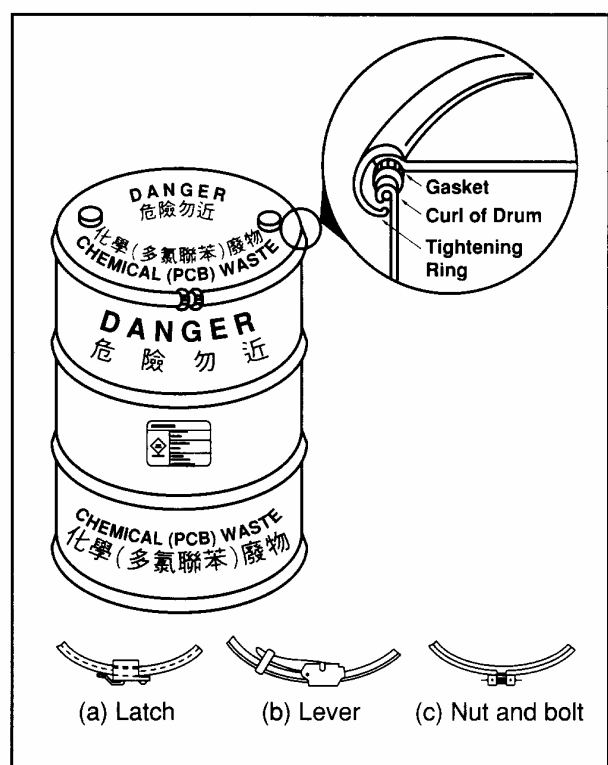


Figure 5 - Full Aperture Drum with Typical Closures and Labels

CONTACT NAMES, ADDRESSES AND TELEPHONE NUMBERS

**FOR ADVICE ON FIRE PREVENTION
AND FIRE FIGHTING SAFETY
ASPECTS**

Fire Protection Bureau
Fire Services Department
1 Hong Chong Road
Tsim Sha Tsui East
Kowloon
Telephone Contact: 2723 8787

**FOR ADVICE ON SAFETY EQUIPMENT
AND PROCEDURES AND THE
LEGISLATIVE CONTROL ON
INDUSTRIAL UNDERTAKINGS**

Occupational Safety and Health Branch
Labour Department
25th floor, Western Harbour Centre,
181 Connaught Road West
Hong Kong
Telephone Contact: Advisory and Development
Division
2559 2297

APPROVED VEHICLES AND HAZARD WARNING PANEL FOR PCB WASTE

Approved vehicles for transporting PCB waste are shown in Figure 6 (for PCB transformers) and 7 (for drummed PCB waste).

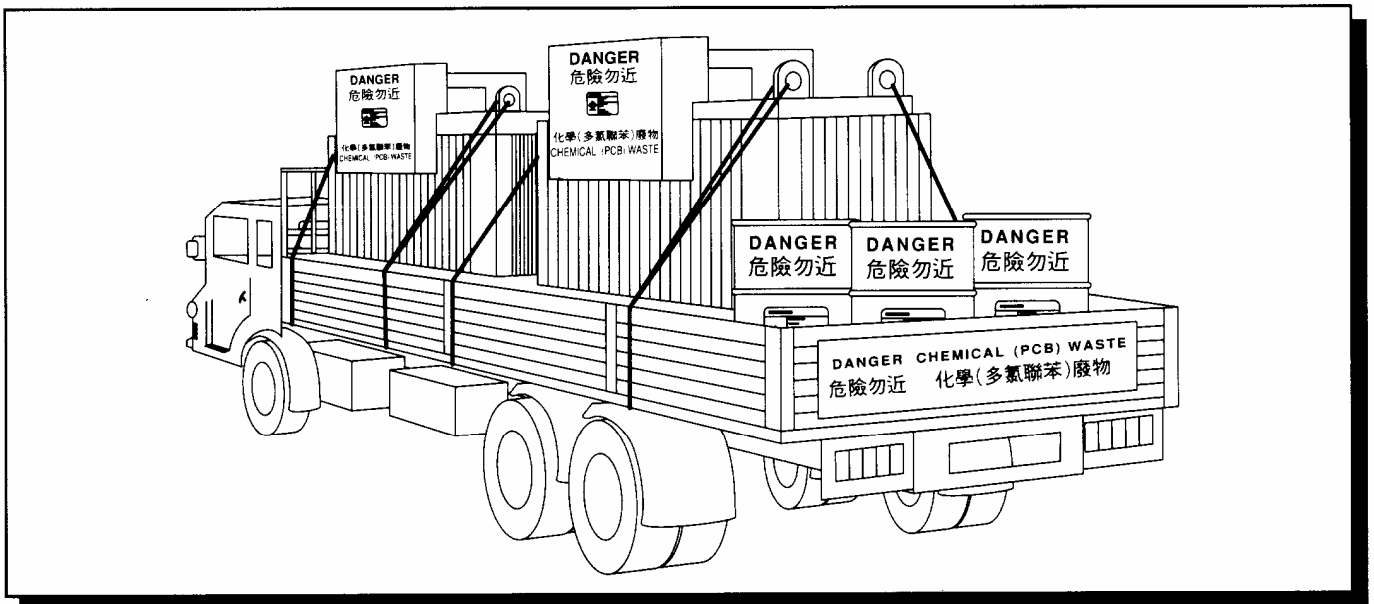


Figure 6 - Vehicle for Transporting PCB Transformers

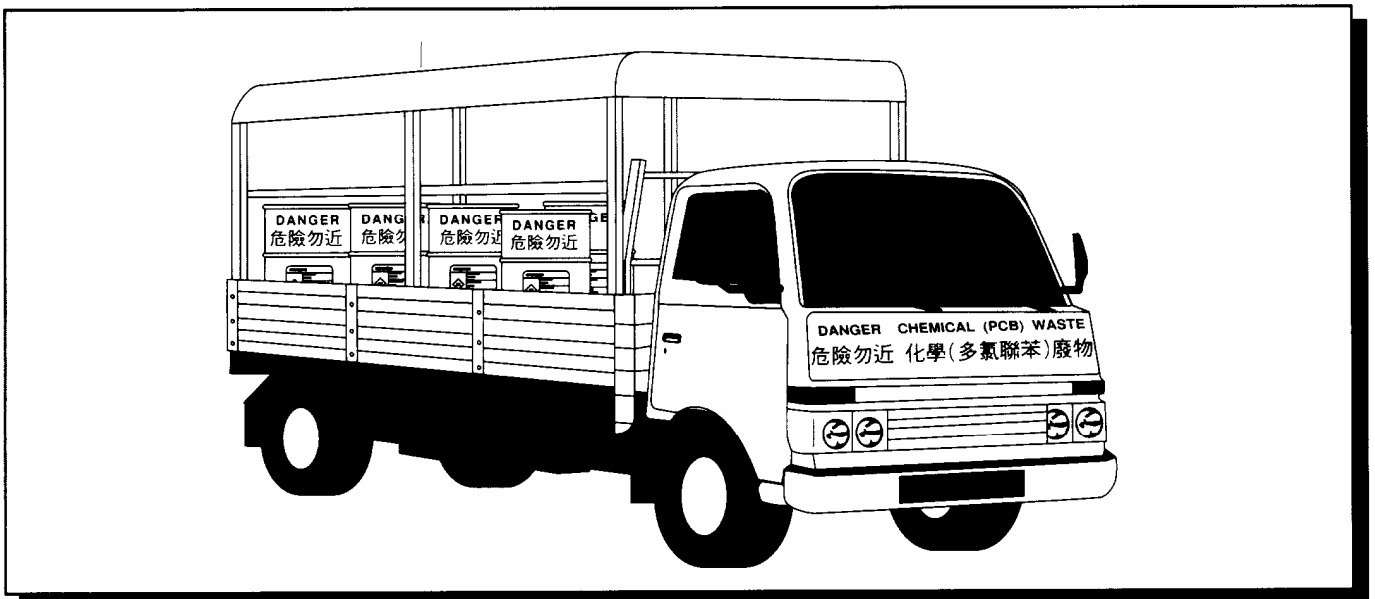


Figure 7 - Vehicle for Transporting Drummed PCB Waste

APPROVED VEHICLES AND HAZARD WARNING PANEL FOR PCB WASTE

One of the two versions (Version A and Version B) of the hazard warning panel as shown in Figure 8 should be displayed at front and rear of the 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 :

- | | | | | | | | |
|--|--|-----------------|-------|------------|--------|---------------------|-------|
| <ol style="list-style-type: none"> 1. Material: aluminium plate (1.6 mm) 2. Finish: reflective background 3. Retro reflective material: class 2, BS 873 | <ol style="list-style-type: none"> 4. Colours: the colour of the sign face sheet material, sign face material or finish shall be as follows - <table border="0" style="margin-left: 20px;"> <tr> <td>Border/Diagonal</td> <td>Black</td> </tr> <tr> <td>Background</td> <td>Yellow</td> </tr> <tr> <td>Characters, Letters</td> <td>Black</td> </tr> </table> 5. All sign face sheet material, sign face material, edge sealant, clear coat lacquers and silk screen inks used shall be mutually compatible. 6. Size: Letters (Height ≥ 60 mm)
Characters (Height ≥ 60 mm) | Border/Diagonal | Black | Background | Yellow | Characters, Letters | Black |
| Border/Diagonal | Black | | | | | | |
| Background | Yellow | | | | | | |
| Characters, Letters | Black | | | | | | |

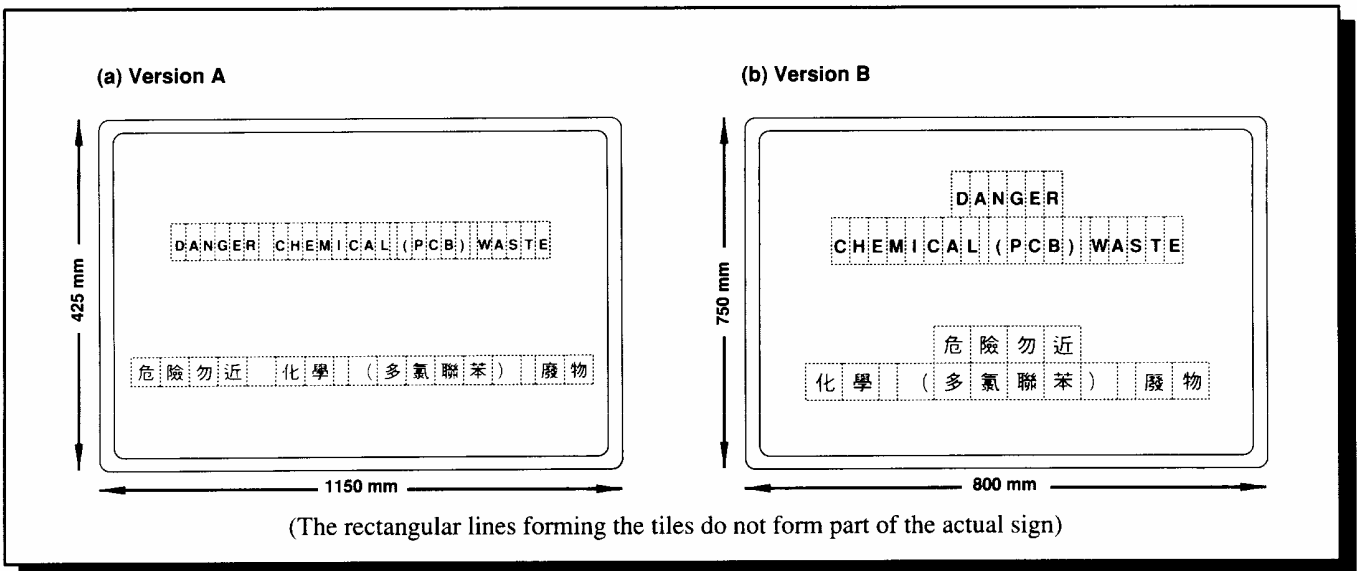


Figure 8 - Hazard Warning Panels for Vehicle

NOTIFICATION FORM

Environmental Protection Department 環境保護署 Waste Disposal Ordinance (Chapter 354) 香港法例第 354 章廢物處置條例 Notification under Section 17 for 'Part A' Chemical Wastes 根據條例第 17 條的規定呈報指定 (甲類) 化學廢物通知書							For Official Use 本欄不用填寫 Reference No. 編號:	
A. WASTE PRODUCER (廢物產生者) Full Name (全名): _____ Waste Producer No. (廢物產生者編號): _____ Address for Correspondence (通訊地址): _____ Tel. No. (電話): _____						C. ACTIVITY OR PROCESS WHICH PRODUCES 'PART A' CHEMICAL WASTE(S) (產生甲類廢物機構經營的主要業務) Brief description of the activity(ies) or process(es). Attach flowchart or diagram if necessary. 簡介指定 (甲類) 化學廢物的生產工序, 可附上有關流程圖或圖解。		
B. LOCATION OR PREMISES WHERE THE WASTE IS PRODUCED (產生廢物的地點或樓宇) Name of Establishment (機構名稱): _____ Major chemical waste type(s) (主要化學廢物種類): _____ Address (地址): _____ Tel. No. (電話): _____ Nature of Business (業務性質): _____ Full Name of Contact Person (聯絡人全名): _____ Capacity (職位): _____								
D. WASTE DESCRIPTION (廢物的描述) List all 'PART A' chemical wastes which are produced at the above location or premises and which are intended for disposal. Please also indicate the frequency of production and estimated quantity for disposal. 詳列上述地點或樓宇產生的及擬予棄置的所有甲類化學廢物。請同時說明其生產的頻率及估計要棄置的數量。								
							(* State the appropriate one 選擇適用者)	
Waste Type / Chemical Name (廢物種類 / 化學名稱)	Waste Code (廢物代號)	Previous Notification (先前的通知書)		Dangerous Goods (危險物品)		Physical Form (廢物形態)	Frequency of Waste Production (廢物產生的頻率)	Estimated Quantity for Disposal (估計要棄置的數量) (L or Kg)* (升或公斤)
		Y* 有 N 否	Reference No. (編號)	Y* 有 N 否	Category (類別)			
1.	_____					Solid 固體 Liquid 液體 Sludge 污泥 Others 其他		L 升 Kg 公斤
2.	_____							L 升 Kg 公斤
3.	_____							L 升 Kg 公斤
4.	_____							L 升 Kg 公斤
E. PROPOSED DISPOSAL ARRANGEMENT (處理廢物的方法) Describe briefly any on-site treatment or other disposal arrangement for each waste type set out in D. 簡述在原址處理及其他棄置 D 欄內各廢物種類之辦法。								
F. REMARKS (註譯) (Include any additional information for safe handling of the waste(s) 填上其他附加資料以確保廢物的安全處理)								
G. DECLARATION (聲明) I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. 特此證明, 就本人所知及所信, 表格內填報的資料全屬真實無訛。								
Signature (簽署)			Name in Block Letters (正楷姓名)			Capacity (職位)		
* on behalf of 代表:			Company Name and Chop as appropriate (公司名稱及印鑑) (如適用者)			Date (日期)		
WARNING: Any person(s) who fails to give notice to the Director of Environmental Protection as required under Section 17 of the Waste Disposal Ordinance commits an offence punishable with a maximum fine of \$100,000 for the first offence, and a maximum fine of \$200,000 and 6 months' imprisonment for a second or subsequent offence. 警告: 任何人士若不按廢物處置條例第十七條的規定通知環境保護署署長, 即屬違法, 初犯者最高可被判罰款港幣十萬元, 次犯及其後再犯最高可被判罰款港幣二十萬元及監禁六個月。								