

For Information

Legislative Council Panel on Environmental Affairs

Visit to Chemical Waste Treatment Centre (CWTC)

Supplementary Information

As a follow-up to the Legislative Council Panel on Environmental Affairs' visit to the CWTC on 25 April 2014, the Administration would like to provide the following supplementary information.

Classification of Chemical Waste in Hong Kong

2. Chemical waste is defined under section 3 of the Waste Disposal (Chemical Waste) (General) Regulation, Cap. 354C. In brief, it is defined that any substance or things being abandoned and contains chemicals specified in Schedule 1 of the said Regulation (extracted at **Annex 1**) shall be regarded as chemical waste if such chemical occurs in such form, quantity or concentration so as to cause pollution or constitute a danger to health or risk of pollution to the environment.

Waste Treated at CWTC

3. The respective quantities of chemical waste, marine pollution waste (MARPOL waste) and clinical waste treated at the CWTC in the last five years are set out at **Annex 2**.

Capital and Operation Costs of CWTC

4. The capital cost for developing the CWTC was about HK\$1,291M¹. The current annual recurrent operation cost is about HK\$200M.

¹ At money of the day prices which were paid during the first 5 years of the operation period of the initial contract. The CWTC commenced its operation in April 1993.

Mercury Waste Treatment Facility (MWTF) and Fluorescent Lamp Recycling Programme

5. The initial capital cost to set up the MWTF was HK\$5.8M at 2002 prices. The MWTF was commissioned in late 2003. The facility is being upgraded and tested in order to cope with the increasing demand for the treatment of mercury-containing wastes, in particular compact fluorescent lamps. The cost for upgrading of the MWTF is about HK\$20M. The upgraded facility can handle up to 3.5 million lamps per year including straight fluorescent lamps, compact fluorescent lamps and high intensity discharge lamps.

6. The first phase of the MWTF was to treat mercury-containing lamps from government departments. Collection of spent mercury-containing lamps from private sectors started in early 2006. Large registered waste producers of mercury-containing lamps from commercial and industrial sectors dispose of these lamps at CWTC under the Chemical Waste Control Scheme. In March 2008, the lighting industry and the Environmental Protection Department (EPD) jointly established the Fluorescent Lamp Recycling Programme (FLRP) to collect and treat mercury-containing lamps from households.

7. The FLRP provides more than 1,300 collection points for the residents of the participating housing estates and the general public to recycle mercury-containing lamps. The service is free of charge. More than 1,140 housing estates have signed up to the programme. Residents can bring their used lamps to their estate's collection point for recycling. In addition, 180 shopping malls and retail outlets have set up collection points under the FLRP to collect spent lamps for subsequent recycling at the CWTC. Furthermore, the EPD's mobile collection vehicle collects spent fluorescent lamps, as well as electrical appliances and computers. It is intended to serve members of the public who may not have access to the collection points set up at the participating housing estates. EPD will continue to work with the property management sector to further promote the collection and recycling of mercury-containing lamps.

8. In 2013, about 2 million fluorescent lamps were handled at the CWTC of which about 25% were collected through the FLRP.

Uniqueness of CWTC

9. The establishment of CWTC in 1993 aims to properly and safely collect, treat and dispose of almost all chemical wastes generated from various trades and industries in Hong Kong. It is also a unique, integral and compact treatment facility for chemical waste, MARPOL waste and clinical waste. The various buildings, treatment facilities, storage tanks as well as air pollution control systems and emission control and monitoring equipment have been compactly housed within a site area of about 2 hectares.

10. Direct comparison of CWTC with other waste treatment facilities, e.g. waste gasification plants in European countries may not be practicable given the differences in types and quantities of waste received and performance requirements and the many different designs and treatment processes involved in different facilities. Unlike municipal solid wastes, chemical wastes are hazardous and have a wide range of physical and chemical characteristics. In order to ensure the most effective treatment of the chemical wastes collected, CWTC employs a number of different treatment processes through initial establishment and subsequent upgrading. For example, the Incineration System for treating chemical and clinical wastes by high temperature incineration; the Copper Recovery Process recovers copper from waste generated from electroplating industry; the Oil and Water Separation Process for treating MARPOL Waste and recovers oil from it, the Mercury Waste Treatment Facility treats mercury-containing waste and recovers mercury from it. Along with treating properly and safely a variety of hazardous waste arising in Hong Kong, the CWTC's environmental performance has met highest emission standards in the world.

11. The EPD will continue to keep track of any new and well proven technologies in hazardous waste treatment and disposal and will review as appropriate whether their application in Hong Kong is suitable and viable.

Environmental Protection Department
June 2014

Schedule:	I	SUBSTANCES AND CHEMICALS	30/06/1997
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[sections 3, 4 & 5]

PART A

Any substance to which the Antibiotics Ordinance (Cap 137) applies

Asbestos

Dangerous drugs (as defined in the Dangerous Drugs Ordinance (Cap 134))

Dangerous goods, category 2, NES

Dangerous goods, category 6, NES

Dangerous goods, category 9, NES

Dibenzofurans

Dioxins

Pesticides (as defined in the register referred to in section 4(b) of the Pesticides Ordinance (Cap 133))

Poisons (Part I) (as defined in the Pharmacy and Poisons Ordinance (Cap 138))

Polychlorinated biphenyls

PART B

Antimony and its compounds

Arsenic compounds

Barium compounds

Beryllium and its compounds

Boron compounds

Cadmium and its compounds

Chromium and its compounds, NES

Chromium bearing solid tannery waste

Cobalt and its compounds

Copper compounds

Cyanides

Dangerous goods, category 3, NES

Dangerous goods, category 4, NES

Dangerous goods, category 5, NES

Dangerous goods, category 7, NES

Dangerous goods, category 8, NES

Dangerous goods, category 10, NES

Halogenated organic solvents and compounds

Lead and its compounds

Manganese and its compounds

Mercury and its compounds

Mineral oils employed for engine lubrication

Mineral oils, NES

Nickel and its compounds

Non-halogenated organic solvents and compounds

Organo lead compounds

Organo mercury compounds

Organo tin compounds

Paints

Pesticides (as defined in the register referred to in section 4(a) of the Pesticides Ordinance (Cap 133))

Pharmaceutical products and medicines, NES

Phosphorus compounds excluding phosphates

Selenium compounds

Silver compounds

Sulphides
Thallium and its compounds
Tin compounds
Vanadium compounds
Zinc compounds

Acids, alkalis and corrosive compounds

Acetic acid above 10% acetic acid by weight
Acids or acidic solutions, NES with acidity equivalent to above 5% nitric acid by weight
Ammonia solution above 10% ammonia by weight
Bases or alkaline solutions, NES with alkalinity equivalent to above 1% sodium hydroxide by weight
Chromic acid above 1% chromic acid by weight
Fluoboric acid above 5% fluoboric acid by weight
Formic acid above 10% formic acid by weight
Hydrochloric acid above 5% hydrochloric acid by weight
Hydrofluoric acid above 0.1% hydrofluoric acid by weight
Hydrogen peroxide solution above 8% hydrogen peroxide by weight
Nitric acid above 5% nitric acid by weight
Perchloric acid above 5% perchloric acid by weight
Phosphoric acid above 5% phosphoric acid by weight
Potassium hydroxide solution above 1% potassium hydroxide by weight
Potassium hypochlorite solution above 5% active chlorine
Sodium hydroxide solution above 1% sodium hydroxide by weight
Sodium hypochlorite solution above 5% active chlorine
Sulphuric acid above 5% sulphuric acid by weight

NES = Not elsewhere specified

(Enacted 1992)

Schedule:	2	PROVISIONS RELATING TO LABELS	30/06/1997
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[section 12]

PROVISIONS RELATING TO LABELS

PART 1

DESIGN OF LABEL FOR CHEMICAL WASTE

Types of Land-based Chemical Wastes Treated at CWTC (in tonnes)

WASTE QUANTITY SUMMARY BY TYPE	EXAMPLE OF INDUSTRY	2009*	2010	2011	2012	2013
Spent etchant (Ammoniacal)	Electronic parts and components manufacturing	850	720	509	432	279
Spent etchant (non-ammoniacal)	Electronic parts and components manufacturing; Repair services; Buffing, polishing and electroplating	770	820	448	319	269
Acids	Fabricated metal products; Electronic parts and components manufacturing.; Aircraft assembly and repair	720	750	432	754	640
Alkalis	Newspaper printing; Non-ferrous metal basic industries; Furniture and fixtures manufacturing	740	770	684	680	520
Toxic metals & metallic compound	Non-ferrous metal basic industries; Electronic parts and components manufacturing; Fabricated metal products; Cold storage; Dry batteries manufacturing	590	610	623	727	734
Halogenated, non-halogenated & flammable solvent	Buffing, polishing and electroplating; Newspaper printing; Tramways and railways; Furniture and fixtures manufacturing; Repair services	2,500	2,580	2,943	1,986	1,965
Land based waste oil	Petroleum refineries; Shipyards Transportation services; Synthetic resins, plastic materials and synthetic fibres manufacturing; Lift/escalator installation and maintenance.	3,510	2,850	1,874	1,720	2,010
Others (including cyanide/pesticides/PCB wastes etc.)	Drug and medicines manufacturing; General cargo warehouses and other storage services	320	450	486	477	509
Total	-	10,000	9,550	7,999	7,095	6,926

Note: * the follow-on contract started in December 2009.

MARPOL Waste Treated at CWTC (in tonnes)

WASTE QUANTITY	EXAMPLE OF INDUSTRY	2009	2010	2011	2012	2013
Total	Ocean-going Vessel/ Ship Company	29,100	9,150	3,913	2,670	2,674

Clinical Waste Treated at CWTC (in tonnes)

WASTE QUANTITY	EXAMPLE OF INDUSTRY	2011	2012	2013
Total	Hospital Authority / Private Clinic	838	2,071	2,067

Note: CWTC has started to treat clinical wastes since August 2011