Chemical Waste Treatment Centre
Monitoring Report
December 2006

I. INTRODUCTION

This Monitoring Report is prepared by EPD for the Planning and Environmental Hygiene Committee of the Kwai Tsing District Council. It outlines the activities of the Chemical Waste Treatment Centre (CWTC) and provides a summary of the environmental performance of the plant.

II. ENVIRONMENTAL PERFORMANCE SUMMARY

CWTC is required to undertake regular checks on environmental performance of the operation of the plant. These include the following:

- Effluent discharge monitoring
- Stack gas monitoring
- Stabilised residue monitoring

The environmental performance summary as shown in Section III of this report covers the result of environmental monitoring in December 2006. In this month, there has been no exceedance of the regulatory control limits. For detailed test results of effluent discharge, stack gas and stabilised residues, please refer to the Tables 1-3 respectively.

III. THE ENVIRONMENTAL MONITORING RESULTS

Effluent Discharge

Effluent from the CWTC treatment processes has to meet statutory and contractual discharge limits on pollutant concentrations. Multiple treatment processes are employed inside the CWTC for all liquid wastes to ensure a safe waste management system. In addition, immediate warning will be activated on any significant change detected in the composition of the effluent, such that prompt corrective response can be initiated.

Effluent from the plant is discharged in batches. Each batch is sampled and analyzed. Discharges will only be permitted if all limits are met.

Stack Gas

Air emissions from the incineration system are closely monitored by a comprehensive management and monitoring programme to ensure that the system is operating safely and in an environmentally acceptable manner.

A continuous monitoring system on the key parameters is installed in

the incinerator stack to ensure the combustion and air pollutant removal processes are functioning well. Furthermore, the incinerator is equipped with an automatic waste feed cut-off system. In the event that the continuous monitoring system picks up any potential sign of exceedance of any of the control parameters, waste feed to the incinerator will be stopped automatically.

Stabilised Residue

All process residues at the CWTC are detoxified, chemically stabilized and physically immobilized to an environmentally benign state. Samples are obtained from the stabilized materials for a series of analytical tests and proven to be innocuous before the stabilized materials to be sent to an off-site landfill for final disposal.

Table 1

Chemical Waste Treatment Centre

Effluent Discharge Summary（December 2006）

Parameters	Control Limits	Range	Mean	Compliance Y/N
PH	6-10 pH	7.6 - 9.6	8.5	Y
Total Kjeldahl Nitrogen	100 mg/l	<20 mg/l	<20 mg/l	Y
Total Phosphate	10 mg/l	<1 mg/l	<1 mg/l	Y
Total Sulphate	2000 mg/l	490 - 1204 mg/l	950 mg/l	Y
Total Sulphides	10mg/l	<0.5 mg/l	<0.5 mg/l	Y
Total Cyanide	0.1 mg/l	<0.04 mg/l	<0.04 mg/l	Y
Total Suspended Solids	100 mg/l	<15 - 17.5 mg/l	15.1 mg/l	Y
Oil and Grease	20 mg/l	<15 mg/l	<15 mg/l	Y
Total Phenols	0.5 mg/l	<0.3 mg/l	<0.3 mg/l	Y
Total Residual Chlorine	1 mg/l	<0.60 - 0.72 mg/l	0.61 mg/l	Y
Anionic Detergents	15 mg/l	<2 mg/l	<2 mg/l	Y
Dissolved TOC	200mg/l	33.4 - 85 mg/l	63.5 mg/l	Y
Temperature	43 ^{o}C	22 - 42 ^{o}C	28.5 ^{o}C	Y
Floatable Substances	Not to be detected	Not detected	Not detected	Y
Toxic Metals :				
Arsenic	2 mg/l	<0.4 mg/l	<0.4 mg/l	Y
Barium	5 mg/l	<1 mg/l	<1 mg/l	Y
Cadmium	0.1 mg/l	<0.1 mg/l	<0.1 mg/l	Y
Chromium	1 mg/l	<0.3 mg/l	<0.3 mg/l	Y
Copper	2 mg/l	<0.5 - 1.0 mg/l	0.57 mg/l	Y
Lead	2 mg/l	<1 mg/l	<1 mg/l	Y
Manganese	5 mg/l	<0.2 - 0.43 mg/l	0.21 mg/l	Y
Mercury	0.05 mg/l	<0.05 mg/l	<0.05 mg/l	Y
Nickel	2 mg/l	<1 mg/l	<1 mg/l	Y
Silver	2 mg/l	<0.4 mg/l	<0.4 mg/l	Y
Tin	5 mg/l	<1 mg/l	<1 mg/l	Y
Zinc	2 mg/l	<1 mg/l	<1 mg/l	Y
Total Toxic Metals	10 mg/l	<6.7 - 7.4 mg/l	7.0 mg/l	Y
Boron	5 mg/l	1.1 - 4.2 mg/l	2.7 mg/l	Y
Iron	10 mg/l	<2 mg/l	<2 mg/l	Y

Parameters	Control Limits	Range	Mean	Compliance Y/N
Pesticides：				
Aldrin	0.01 mg/l	<0.01 mg/l	<0.01 mg/l	Y
BHCS	0.01 mg/l	<0.01 mg/l	<0.01 mg/l	Y
DDT	0.01 mg/l	<0.01 mg/l	<0.01 mg/l	Y
Semi-volatile Compounds：				
Benzo (A) Pyrene	0.1 mg/l	<0.1 mg/l	<0.1 mg/l	Y
Volatile Compounds：				
1,1,1-Trichloroethane	0.05 mg/l	<0.05 mg/l	<0.05 mg/l	Y
Polychlorinated Biphenyls：				
Total PCBs	0.003 mg/l	<0.003 mg/l	<0.003 mg/l	Y
Radioactive Substances：				
Grossβ	10000 pc/l	<10000 pc/l	<10000 pc/l	Y
Radium-226	30 pc/l	<30 pc/l	<30 pc/l	Y
Strontium-90	100 pc/l	<100 pc/l	<100 pc/l	Y

Total toxic metals include: Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Silver, Tin, Zinc.

Table 2

Chemical Waste Treatment Centre

Stack Gas Monitoring Summary（December 2006）

Parameters	Control Limits (mg/m^3)	Range (mg/m^3)	Mean (mg/m^3)	Compliance Y/N
Particulates	75	2.1	2.1	Y
Chlorine and Compounds (as Cl_2)	100	<4.0	<4.0	Y
Fluorine and Compounds (as HF)	25	<0.4	<0.4	Y
Acidity (as Sulphuric Acid)	100	16.9	16.9	Y
Sulphur Dioxide	750	50.3	50.3	Y
Hydrochloric Acid	38	7.2	7.2	Y
Total Phosphorus (as P)	7.5	<0.674	<0.674	Y
Hydrogen Fluoride	7.5	<0.9	<0.9	Y
Hydrogen Bromide	7.5	<4.3	<4.3	Y
Toxic Metals I :				
Mercury	3	<0.007	<0.007	Y
Cadmium	3	<0.057	<0.057	Y
Antimony	3	<0.568	<0.568	Y
Toxic Metals II :				
Lead	10	<0.674	<0.674	Y
Copper	10	<0.078	<0.078	Y
Arsenic	10	<0.007	<0.007	Y
Nickel	10	<0.135	<0.135	Y
Chromium	10	<0.057	<0.057	Y
Total of Toxic Metals I & II	10	<1.583	<1.583	Y
Dioxin (Monthly)	0.1 ng/m^3	0.0048 ng/m^3	0.0048 ng/m^3	Y

Table 3

Chemical Waste Treatment Centre
Stabilised Materials Summary（December 2006）

Parameters	Control Limits (ppm)	Range (ppm)	Mean (ppm)	Compliance Y/N
Section A				
pH (water)	8 (lower limit)	12.2 - 12.7	12.5	Y
% Solids	30 (lower limit)	43 - 90	61.8	Y
Toxic Metals：				
Cadmium	0.5	<0.5	<0.5	Y
Mercury	0.1	<0.02	<0.02	Y
Total Chromium	10	<0.5	<0.5	Y
Copper	-	<0.5 - 5.6	2.5	-
Nickel	-	<0.5	<0.5	-
Lead	-	<1 - 7.5	1.2	-
Zinc	-	<0.5 - 1.1	0.5	-
Total of copper, nickel, lead, zinc	25	<2.5 - 12	4.8	Y
Iron	20	<1	<1	Y
Sulphide	10	<5	<5	Y
Ammoniacal Nitrogen	10	<1 - 5.9	1.8	Y
Cyanide	5	<5	<5	Y
Section B				
Volatile Organic Contents	5000	<15	<15	Y
Total Organic Halides	10	<5	<5	Y
Total Chlorophenols	2	<2	<2	Y
Polychlorinated Biphenyls	1	<1	<1	Y
TCDD equivalent (ITEF method)	1 ppb	<1 ppb	<1 ppb	Y