CB(1) 1782/01-02(09)

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22 May 2002

Clerk to the Panel on Environmental Affairs
(Attn : Miss Becky Yu)
Legislative Council Secretariat
3/F, Citibank Tower
Hong Kong
Fax 2869 6794

Dear Miss Yu,

Proposed Clinical Waste Control Scheme

At the Panel meeting of 20 March 2002 in which the captioned Control Scheme was discussed, Members requested the following :

(a) outcome of discussion on the proposed Scheme with the Advisory Council on the Environment (ACE) and District Councils;

(b) information on the findings of the food surveillance programme and the results of the monitoring studies on dioxin emission; and

(c) legislative timetable for the Scheme.

Discussion with the ACE

2. As mentioned in para 18 of Panel paper CB(1)1323/01-02(2), ACE endorsed in May 1999 the Environmental Impact

Assessment Report regarding the use of the Chemical Waste Treatment Centre (CWTC) to treat clinical waste. We consulted ACE again on 29 April 2002. ACE reaffirmed its support for both the Control Scheme and the proposed treatment of clinical waste at CWTC. Extract from the minutes of the ACE meeting is at Annex A.

Discussion with the Kwai Tsing District Council (KTDC)

3. The Environmental Protection Department organised a visit for KTDC to CWTC on 3 May 2002. We also consulted KTDC on the Control Scheme and the proposed treatment of clinical waste at CWTC on 9 May 2002. Some KTDC Members were concerned about treating additional waste in Tsing Yi, and the KTDC passed a motion against the project. Draft minutes of the meeting are not yet available. A copy of the letter from the KTDC Secretariat is at Annex B.

Findings and Progress of Dioxin-related Programmes/Studies

4. Information on the findings and progress of our dioxin-related studies and monitoring programmes are at Annex C.

Legislative Timetable

5. We plan to submit the Waste Disposal (Amendment) Bill and relevant draft regulations to this Council later this year. Subject to the enactment of the Bill and regulations, we will implement the proposed Scheme in 2004.

6. Separately, we plan to seek $51 million from the Public Works Sub-committee of this Council later this year for the modification of CWTC. The proposed works include modifying the reception, handling and storage facilities, provision of transit skips for the containment and delivery of clinical waste, as well as the provision of computerized weighing and recording systems. Subject to the approval of funding, the proposed works will start in mid-2003.

The Issue of Dioxin Emission

7. We understand some Panel members are concerned about the issue of dioxin. I would like to take this opportunity to emphasize the following points :

- Dioxin arises from incomplete combustion of chlorine-containing materials, such as polyvinyl chloride (PVC).

- Under the proposed Scheme, clinical waste is confined to waste that is obnoxious, infectious or bio-hazardous in nature. With this classification, most clinical waste does not contain PVC. Based on a survey conducted by the Hospital Authority, we estimate that the PVC content of clinical waste is less than 3% by weight.

- The plastic content of clinical waste mainly comes from syringes, gloves and sharp boxes etc, which are mostly made of polyethylene, polypropylene and latex, not PVC. These materials do not emit dioxin upon incineration.

- CWTC is a purpose-built facility with dioxin-control devices, including :

  - A rotary kiln and a secondary combustion chamber that operates at 1,100 – 1,200° C to disintegrate dioxin. (Dioxin would disintegrate at about 800° C).

  - A quenching system to reduce the gas temperature to below 200° C, thus preventing the re-formation of dioxin, which may happen between 200 – 400° C.

  - The gas cleaning systems -- dual activated carbon injector, spray dry absorber and fabric filter bag -- to remove remaining contaminants in the gas before it is emitted into the air.

- An automatic system to cut off waste feed into the incinerator if essential combustion parameters such as the temperature, carbon monoxide concentration or sulphur dioxide concentration exceed the pre-set limits.

8. Emission of dioxin at the CWTC is monitored on a monthly basis. In 2001, the average dioxin level of stack gas is 0.0075 ng I-TEQ/metre^3, which is much lower than the emission limit of 0.1 ng I-TEQ/metre^3. This limit is among the most stringent standards adopted in the world. For Members' reference, the emission limits adopted by other economies are: European Union (0.1 ng I-TEQ/metre^3), Singapore (0.1- 0.5 ng I-TEQ/metre^3), Japan (0.1 – 5.0 ng I-TEQ/metre^3) and the US (0.6 - 2.3 ng I-TEQ/metre^3). Monthly monitoring results of dioxin level of stack gas at CWTC in 2000 and 2001 are at Annex D. The monitoring results show that the CWTC has been very effective in handling dioxin.

9. In view of the fact that the CWTC is capable of complying with the most stringent standard for dioxin emission and that PVC content of clinical waste is insignificant, our assessment is that the proposed treatment of clinical waste at the CWTC will not pose any additional risk or hazards to the area.

Yours sincerely,

(Ms Annie Choi)
for Secretary for the Environment and Food

Encl.

Annex A

Extract of Minutes of the 95th Meeting of the Advisory Council on the Environment held on 29 April 2002 at 2:30 p.m.

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Agenda Item 4: Proposed Clinical Waste Control Scheme
(ACE Paper 12/2002)

47 The Chairman welcomed Ms. Annie Choi, Messrs Patrick Lei, Conrad Lam and David Ha to the meeting. Ms. Choi briefed Members on the proposed scheme.

48. A member declared interest since the Hong Kong Productivity Council had been cooperating with a company that was promoting the plasma-based technology.

49. In response to the Chairman's enquiry, Ms. Choi said that the two Hospital Authority incinerators would cease to operate after the implementation of the proposed scheme.

50. A member supported the proposed scheme and commended that it was a big step forward in waste management. However, the Administration should take into account the concept of integrated waste management, particularly waste reduction.

51. A member noted that the United States Environmental Protection Agency (USEPA) had recently adopted a more stringent set of standards for clinical waste incineration. She asked how the Hong Kong standards would compare with the new standards in the United States. She also noted that a research conducted by the USEPA suggested that clinical waste was more a problem of occupational hazards than of environmental pollution. In that regard, she queried whether it was justified to modify CWTC for the incineration of clinical waste. She urged the Administration to explore and consider alternative disposal technologies before jumping to the conclusion of incineration simply because of the availability of the CWTC.

52. In response to the member's comments, Ms. Choi said that the current emission standard of dioxin in Hong Kong was 0.1 ng I-TEG/m^3 which was among the most stringent requirement in the world. The CWTC with an average emission of 0.0075 ng I-TEG /m^3 in 2001 would have no problem in meeting that standard. Regarding alternative technologies, the review report had covered assessment of possible alternatives but suggested that they would either require post-treatment land-filling or incineration, or were not capable of killing all infectious microorganisms. Incineration was recommended because it was by far the most proven technology in the world for treating clinical waste.

53. A member said that that if clinical waste was really an issue of occupational hazard, preventive measures like training the staff on proper handling should be pursued instead of spending the taxpayers' money on modifying the CWTC and incinerating the clinical waste. Following her argument, another member asked how the risk of dioxin emission would compare with the risk of medical staff handling clinical waste.

54. In response to the comments of the two members, Ms. Choi explained that according to the findings of a survey carried out by the Hospital Authority, only 3% of clinical waste contained PVC which was the major element that would generate dioxin upon combustion. In view of the small percentage of PVC in clinical waste and the comprehensive pollution control devices at CWTC (such as high temperature combustion chamber, quenching system to prevent dioxin reformation, bag filter system, activated carbon injection system, etc.), the risk of dioxin emission was not a major issue in the proposal. The $51M mentioned in para. 20 of the paper was to improve the reception and storage facilities of CWTC to handle clinical waste rather than to upgrade CWTC which was already well equipped to control emissions of pollutants.

55. A member asked whether alternative technologies and methods had been considered in the EIA report endorsed by the Council three years ago. In response, Ms. Choi said that the report contained the assessment of the impact of the modification of CWTC for treating clinical waste only. However, the review conducted by Mr. Townend had covered alternative technologies and methods that were available.

56. Noting that the Hospital Authority generated over half of the total quantity of clinical waste in Hong Kong, the Chairman asked whether the Administration would consider recovering full operating cost from the Hospital Authority. In response, Ms. Choi said that the Administration intended to gradually raise the fee to achieve full cost recovery.

57. A member said that apart from PVCs, other materials used in manufacturing medical apparatus might contain dioxin-formation chemicals. Therefore, the Administration should monitor the manufacturing of new plastic medical apparatus. On that point, the Chairman reckoned that the procurement policy of the Hospital Authority and the Department of Health could address the problem mentioned by the member. In response, Ms. Choi said that the two bodies were closely involved in the exercise. EFB and EPD would maintain close contact with them in that regard.

58. A member referred to the long-term solution mentioned in the paper for treating clinical waste and asked when such strategy would be ready. Ms. Choi said that as the designed life of CWTC would end in 2012, the Administration would need to review the strategy within the decade.

59. In view of the public concern on the risk of dioxin emission, a member suggested that the monitoring of dioxin emission at CWTC should be made at least once a month. In response, Ms. Choi clarified that the emission monitoring at CWTC was done on a monthly basis. The emission data were available for public inspection on the internet and were submitted to Kwai Tsing District Council for information.

60. The Chairman thanked Ms. Choi and the presentation team for the briefing and concluded that the Council supported the proposals. A member registered her reservation.

ACE Secretariat
May 2002

附件 B　Annex B

葵青區議會

致： 環境保護署
助理署長(廢物設施)
陳英儂博士

陳博士：

二〇〇二年五月九日
葵青區議會第十七次會議
(討論事項：醫療廢物處理技術的檢討 －
建議化學廢物處理中心處理醫療廢物)

現特函通知，本區議會議員在上述第十七次會議通過下列動議：

「葵青區議會強烈反對在青衣化學廢物處理中心焚燒醫療廢物。」

請貴署就上述事宜進行所需的跟進工作。有關會議紀錄擬稿容後寄奉。如有查詢，請致電 2423 5092 與胡思慧女士聯絡。

葵青區議會秘書梁麗華

副本送：葵青民政事務專員
環境食物局局長(經辦人：蔡淑嫻女士)

二〇〇二年五月十六日

Annex C

Report on Studies and Monitoring Programmes on Dioxin

1. Monitoring of Dioxin Level in Food

The Food and Environmental Hygiene Department (FEHD) started a food surveillance programme in 1999 with a view to monitoring the dioxin levels in food, so that action could be taken to prevent the sale of food items containing unacceptable level of dioxins in Hong Kong.

Since dioxins are commonly found in food items of high fat content, food samples are taken from meat and meat products, poultry and poultry products, seafood, milk and milk products, as well as eggs and egg products. Both local and imported food are included. Between June 1999 to March 2002, 365 samples have been tested. At present, an average of 10 food items are tested each month.

At present, there is no international standard on dioxin level in food. FEHD adopts the US guideline in setting the alert level for initiating follow up action. So far, all results obtained are within the acceptable level.

2. Study on Dietary Exposure of Secondary School Students to Dioxins

FEHD has carried out a dietary exposure assessment study on secondary school students to assess the students' dietary exposure to dioxins, to identify their major dietary sources of dioxins, and to assess the possible health impact of dioxin exposure. Under the assessment study, a food consumption survey with secondary school students has been conducted in late 2000. FEHD has taken into account the results of the survey together with the food surveillance findings in evaluating the level of dietary intake of dioxins by secondary school students. Preliminary results show that the dietary exposure of secondary school students to dioxins is below the tolerable daily intake level for dioxins set by the World Health Organization of 1 - 4 TEQ picograms per kilogram of body weight. The final results will be available in mid-2002.

In the long run, FEHD plans to conduct a full-scale population-based food consumption survey to collect food consumption data for assessing dietary contaminants and food safety risk of the whole population of Hong Kong.

3. **Dioxin Monitoring Programme for Soil, Vegetation and Air near Waste Treatment Facilities**

In 2001, the Environmental Protection Department (EPD) launched a dioxin monitoring programme on soil, vegetation, air and landfill leachate in the vicinity of the waste treatment facilities, including the Chemical Waste Treatment Centre (CWTC), existing and closed landfills and the composting plant. The first round of sampling was conducted in August 2001, and the results show that the dioxin level is comparable to that of other urban cities. Results of the first round sampling are at Table 1.1-1.4. The second round of sampling was conducted in January 2002 and the results will be available in mid-2002.

4. **Monitoring of Dioxin Level in Ambient Air**

The monitoring of dioxins in ambient air started in mid-1997 as part of the monitoring programme of toxic air pollutants. Dioxin samples are collected at two monitoring stations in the territory, one at Central & Western and the other at Tsuen Wan once every two weeks. The annual average dioxin concentrations in 2000 and 2001 are 0.056 pg I-TEQ/m^3 and 0.051 pg I-TEQ/m^3 respectively. These levels are lower than or comparable to levels in other countries (Japan – 0.08-0.28 pg/m^3; Korea 0.029-0.69 pg/m^3; Australia – 0.02-0.06 pg/m^3; USA – 0.09-0.45 pg/m^3).

Samples are also collected separately at Tsing Yi under the monitoring programme of the CWTC for measurement of dioxin level in ambient air. Results show that the dioxin concentration is within the normal level. Table 2 sets out the sampling results of samples collected in Central & Western, Tsuen Wan and Tsing Yi 2000 - 2001.

EPD will continue to monitor the dioxin levels in ambient air.

5. **Pilot Study on Human Dioxin Levels in Hong Kong**

The Environment and Conservation Fund has provided funding of $1.3 million for the Hong Kong University to conduct a pilot study on human dioxin levels in Hong Kong. The study focuses on the dioxin levels in the breast milk of nursing mothers, from which results would be generalizable to the whole population. The study has commenced in April 2001 and is expected to be completed by early 2003.

6. **Sampling study to evaluate the aerial emission of dioxins in Hong Kong**

EPD will carry out a 3-year sampling study to evaluate the emission of dioxins in Hong Kong. About 100 emission samples will be collected from crematories, hospital incinerators, cement kiln, coal-fired power plants, the CWTC, etc. The sampling work will start in October this year, and the whole study will be completed in 2005. Upon completion of the study, EPD will review the study outcome to consider the need for similar studies on a regular basis.

Dioxin Monitoring Programme for Soil, Vegetation and Air near Waste Treatment Facilities

Table 1.1 HK's Dioxin Data (Soil) Compared with Other Countries

Dioxin concentration (ng I-TEQ/kg)		
Location	Range	Reference
Hong Kong	**1.60 - 11.22**	**EPD's Dioxin Survey (Aug 2001)**
Japan	1.0 – 65.0	Liem and van Zorge (1995)
United Kingdom	4.88 - 87.3	Creaser et al (1990)
United States	0.08 - 22.6	Rappe et al (1997)
Netherlands	1.0 – 20.0	Liem and van Zorge (1995)
Canada	1.0 – 330.0	Liem and van Zorge (1995)
Germany	1.0 – 30.0	Blag et al (1992)

Table 1.2 HK's Dioxin Data (Vegetation) Compared with Other Countries

Dioxin concentration (ng I-TEQ /kg)		
Location	Range	Reference
Hong Kong	**0.48 - 2.47**	**EPD's Dioxin Survey (Aug 2001)**
Japan	0.19 - 21.3	Komichi et al (2001)
Spain	0.32 - 2.52	Domingo et al (2000)
Germany	0.33 – 1.98	Schuhmacher et al (2000)

Table 1.3 HK's Dioxin Data (Leachate) Compared with Other Countries

Dioxin concentration (μg I-TEQ /m^3)		
Location	Range	Reference
Hong Kong (landfill leachate effluent)	**0.002 - 0.022**	**EPD's Dioxin Survey (Aug 2001)**
Canada (secondary)	Non detectable - 0.204	Van Oostam and Ward (1995)
USA (storm)	0.0001 - 0.065	Paustenbach et al (1996)
Sweden (river)	0.031 - 0.099	Rappe et al (1989)
New Zealand (stream)	Non detectable - 0.0054	Gifford et al (1996)

Table 1.4 : HK's Dioxin Data (Air) Compared with Other Countries

Dioxin Concentration (pg I-TEQ /m^3)		
Location	Range	Reference
Hong Kong	**0.01-0.29**	**EPD's Dioxin Survey (Aug 2001)**
USA	0.09-0.45	Hunt et al (1997)
United Kingdom	Non detectable - 1.80	Duarte-Davidson et al (1994)
Japan	0.08-0.28	Seike at al (1997)
Korea	0.03-0.69	Hyo-bang et al (1999)
Spain	0.07-0.53	Abad et al (1997)
Slovakia	0.05-0.13	Stenhouse et al (1998)

Table 2. Sampling results of Tsuen Wan, Central &Western and Tsing Yi 2000 – 2001 for Dioxin Level in Ambient Air

Ambient Dioxin Concentration pg I-TEQ/ m^3						
	Tsuen Wan		Central & Western		Tsing Yi	
Year	2000	2001	2000	2001	2000	2001
Jan	0.162	0.081	0.069	0.075	0.076	0.168
Feb	0.048	0.121	0.073	0.069	0.055	0.06
Mar	0.059	0.048	0.040	0.051	0.038	0.193
Apr	0.049	0.046	0.049	0.036	0.038	0.042
May	0.040	0.041	0.041	0.040	0.038	0.037
Jun	0.036	0.036	0.036	0.036	0.036	0.037
Jul	0.036	0.036	0.037	0.035	0.039	0.038
Aug	0.036	0.037	0.042	0.037	0.039	0.039
Sep	0.036	0.067	0.035	0.049	0.103	0.047
Oct	0.083	0.037	0.049	0.037	0.058	0.048
Nov	0.088	0.065	0.081	0.042	0.07	0.064
Dec	0.067	0.048	0.055	0.044	0.046	0.059
Average	**0.061**	**0.055**	**0.051**	**0.046**	**0.053**	**0.069**

Annex D

CWTC Dioxin Concentration of Stack Emission in 2000 and 2001

Control Limit: 0.1 ng I-TEQ/m^3

Year 2000	ng I-TEQ/m^3
January	0.0070
February	0.0038
March	0.0222
April	0.0058
May	0.0007
June	0.0008
July	0.0200
August	0.0057
September	0.0072
October	0.0046
November	0.0149
December	0.0047
Average	**0.0081**

Year 2001	ng I-TEQ/m^3
January	0.0199
February	0.0114
March	Note
April	0.0055, 0.0041
May	0.0067
June	0.0043
July	0.0130
August	0.0033
September	0.0172
October	Note
November	0.0007, 0.0005
December	0.0039
Average	**0.0075**

Note: Sample was voided before testing as sample might have been contaminated. The result of the repeat sample was reported in the following month.