立法會
Legislative Council

LC Paper No. CB(1) 1809/01-02
(These minutes have been seen by the Administration)

Ref: CB1/PL/EA/1

LegCo Panel on Environmental Affairs

Minutes of special meeting held on Tuesday, 19 March 2002, at 8:30 am in the Chamber of the Legislative Council Building

Members present	**:**	Hon CHOY So-yuk (Chairman) Ir Dr Hon Raymond HO Chung-tai, JP Hon Martin LEE Chu-ming, SC, JP Hon SIN Chung-kai Hon WONG Yung-kan Hon LAU Kong-wah Hon Emily LAU Wai-hing, JP Hon LAW Chi-kwong, JP Hon Henry WU King-cheong, BBS Hon Michael MAK Kwok-fung Dr Hon LO Wing-lok Hon LAU Ping-cheung Hon Audrey EU Yuet-mee, SC, JP
Members absent	**:**	Hon Cyd HO Sau-lan (Deputy Chairman) Hon CHAN Yuen-han, JP Hon Miriam LAU Kin-yee, JP Hon Abraham SHEK Lai-him, JP Hon Tommy CHEUNG Yu-yan, JP
Public officers attending	**:**	Civil Engineering Department Dr C K LAU Director Mr W K TAM Deputy Director/Special Duties

Mr P D MORGAN
Chief Engineer/Special Duties (Works)

Maunsell Environmental Management Consultants Limited

Mr Matthew KO
Associate

Maunsell Consultants Asia Limited

Mr Eric MA
Associate

Environmental Protection Department

Mr Simon HUI
Principal Environmental Protection Officer
(Assessment and Audit)

Tourism Commission

Miss Winnie HO
Assistant Commissioner for Tourism

Environment and Food Bureau

Ms Joyce HO
Assistant Secretary (B) 2A

Works Bureau

Mr Albert CHENG
Chief Assistant Secretary (Programme Management)

Attendance by invitation : Greenpeace

Ms Miranda YIP
Campaigner

Dr Darryl LUSCOMBE
Scientist

Hong Kong Baptist University

Professor Jonathan WONG

Mr Roy H PATTERSON, R.G., R.E.A. II

Dr Stanley TANG

Mr Mars LI

Clerk in attendance : Miss Becky YU
Chief Assistant Secretary (1)1

Staff in attendance : Mrs Mary TANG
Senior Assistant Secretary (1)2

I Treatment of dioxin

The Chairman remarked that the purpose of the current meeting was to allow for an exchange of views between members and experts in the field of dioxin on the latest technological development in the treatment of dioxin.

Meeting with Professor Jonathan WONG of the Hong Kong Baptist University

2. Professor Jonathan WONG said that there were various treatment options for dioxin and chlorinated hydrocarbon. Apart from incineration which was a well-proven treatment technology, other available technologies included thermal desorption, bioremediation and vitrification. Thermal desorption was a relatively new proven technology in the treatment of chlorinated hydrocarbon. It removed organic and organochlorine chemicals, including dioxin, by indirectly heating the contaminated soil, causing the contaminants to evaporate so that they could be collected for treatment later. The toxic residue could then be treated by either incineration or Base Catalytic Dechlorination (BCD). Incineration was however more preferable than BCD as the latter had the disadvantage of generating a more toxic form of dioxin in the event of incomplete dechlorination. Besides, the efficiency rate of 99.999% for BCD was lower than that of 99.9999% for incineration.

3. As regards bioremediation, Professor WONG said that as the biodegradation rate of dioxin was very low, it would take a long time for dioxin to decompose, leading to uncertainty in the treatment process. Other technologies such as plasma based system and vitrification were also not proven to work in field application on a large

scale. It was therefore not desirable to adopt these technologies to treat the dioxin-contaminated soil at the Cheoy Lee Shipyard (CLS) site. Professor WONG further pointed out that it would not be possible to use incineration alone to treat the contaminated soil at CLS given the large amount of contaminated soil which needed to be dealt with. He considered it more preferable to treat the contaminated soil with thermal desorption first before undergoing incineration.

Meeting with Dr Darryl LUSCOMBE of Greenpeace
(LC Paper Nos. CB(1) 1322/01-02(01) and (02))

4. Dr Darryl LUSCOMBE stressed that as there was no perfectly safe technology in treating toxic waste and persistent organic pollutants (POPs) such as dioxin, priority should be given to avoiding the generation of these pollutants in the first place. He said that due to the international concern over the health and environmental hazards of POPs, the first global and legally binding Stockholm Convention (SC) was formally adopted in Sweden on 22 May 2001. The aim of SC was to eliminate the production and the use of POPs worldwide. Although SC had been signed by 117 nations (including China) and ratified by six nations, it would not come into force until ratified by 50 nations, after which it would become part of international law. Signatories to SC had the obligation to continually minimize and ultimately eliminate all anthropogenic sources of POPs. The Final Act of SC called on all governments to begin implementing the obligations prior to its entry into force. SC had also identified, among other things, incineration as the primary source of dioxins and other POPs. He pointed out that apart from incineration, other technologies such as BCD and Gas Phase Chemical Reduction (GPCR) were also available in the treatment of POPs. Both alternative treatment technologies were reductive processes with high destruction efficiencies and would not result in the release of dioxins. They operated in a closed system and were able to contain by-products from decomposition. They had been adopted commercially around the world.

5. In the case of CLS, Dr LUSCOMBE opined that the use of thermal desorption might be feasible as the first stage in separating and concentrating the dioxin from the contaminated soil. However, the proposed use of incineration at the Chemical Waste Treatment Centre (CWTC) to treat the residue from thermal desorption at Tsing Yi was a cause for concern, particularly in the absence of a detailed assessment. Greenpeace considered that a full comparison should be made on all the available technologies, including BCD and GPCR. Consideration should also be given to on-site treatment to minimize the risk associated with transport of the contaminated soil. He pointed out that the Homebush Bay remediation project was a successful example of on-site treatment of contaminated soil using thermal desorption followed by BCD. Given that the CLS project would be the first large-scale remediation project since the adoption of SC, this provided an excellent opportunity for Hong Kong to demonstrate its commitment to the ideals and obligations of SC and to set an example of avoiding the use dioxin-producing technologies such as incineration.

Action

Meeting with Mr Roy H PATTERSON
(LC Paper No. CB(1) 1322/01-02(03))

6. Mr Roy H PATTERSON declared that he was a representative of URS Corporation which, together with BMT Asia Pacific, constituted the independent environmental consultant (IEC) for CLS land contamination assessment. The role of IEC included preparing the remedial investigation workplan which set forth the scope of investigation to be conducted. In addition to providing an independent evaluation on the nature and extent of contamination, IEC had also assessed the human and ecological risks associated with identified contaminants and recommended remedial alternatives for the site. IEC had followed both Hong Kong standards and guidelines as well as standards adopted by United States (US) Environmental Protection Agency (EPA). Its findings were included in a remedial workplan for CLS as an appendix to the Environmental Impact Assessment (EIA) report. IEC found that the CLS site had been impacted by chemicals of potential concern, including dioxin. A number of proven remediation technologies were independently evaluated by IEC. It concurred with the recommendations of EIA on the adoption of a two-stage process to treat the contaminated soil with thermal desorption followed by incineration.

7. As regards the second-stage treatment, Mr PATTERSON said that IEC had compared both BCD and incineration. Incineration had been used for decades and had been identified by EPA as the best available demonstrated technology. There were about 30 commercially operated incinerators in US used for treating dioxin-contaminated or chlorinated compounds. He noted that Hong Kong had an established CWTC at Tsing Yi which was a modern chemical waste treatment facility capable of handling both liquid and solid waste. It was regulated by Environmental Protection Department (EPD) and its level of dioxin emission was under constant surveillance in nearby sensitive receptors. According to information, there had only been two incidents over the nine years of operation of CWTC where the dioxin emission level had exceeded the allowable limits, which were four times more stringent than those applied in US. As such, CWTC should be a viable option that could be used to permanently destroy the process residue of dioxin-contaminated soil resulting from thermal desorption.

8. Mr PATTERSON further pointed out that BCD was an innovative and emerging technology which was developed by EPA 10 years ago as an alternative to incineration. However, there were potential problems of generating other forms of dioxin if the dechlorination process was incomplete. The track record of BCD was also very limited. Although it had a number of successful examples of application, including the Homebush Bay remediation project, it was only implemented once in US on a full-scale application. BCD technology had to be licensed for application and a feasibility study on site-specific waste streams had to be performed in order to establish its effectiveness.

9. In concluding, Mr PATTERSON said that IEC believed that if properly controlled, both BCD and incineration were acceptable technologies that could be used to destroy the dioxin present in the residue after thermal desorption. However, as BCD was not readily available in Hong Kong, it would have to be imported and tested before actual implementation. This would be a long and costly process and would in turn delay the remediation plan for the CLS site. Besides, as the process residue from thermal desorption was a hazardous waste, shipping the waste to another location where there was an existing BCD plant would be problematic.

Meeting with Dr Stanley TANG and Mr Mars LI
(LC Paper Nos. CB(1) 1322/01-02(04), (05) and (06))

10. Mr Mars LI of the Startech Environmental (Asia) International Co. Ltd (Startech) gave a power-point presentation on the Plasma Waste Converter (PWC) System which was a new waste treatment technology using a non-incineration distraction process. The PWC System made use of high temperature ionized gas to convert waste to a vitrified substance. It could effectively destroy dioxins and other pollutants and had been used to treat hazardous waste generated by manufacture of munitions, pharmaceutical industries and petroleum refinery in many parts of the world. Owing to its zero discharge, the PWC System had received the United Nations Environment Award on 23 March 1999. Mr LI said that the PWC System could be used to treat all types of wastes in a safe and efficient manner. Its relatively small size had enabled it to be used as a mobile treatment facility and hence highly suitable for use in Hong Kong.

(*Post-meeting note*: Copies of the presentation materials on the PWC System tabled at the meeting were circulated to members vide LC Paper No. CB(1) 1344/01-02.)

Discussion session

11. On ***incineration***, the Chairman sought Dr LUSCOMBE's views on treatment of process residue from thermal desorption at CWTC in Tsing Yi. Referring to a recent international conference on waste treatment, Dr LUSCOMBE said that consensus had been reached that prevention and avoidance should be the first consideration in the assessment of the best available technique. He also pointed out that incineration was not accepted as the first choice under SC. Dr LO Wing-lok asked whether properly controlled incineration was an acceptable means to treat contaminated waste. Dr LUSCOMBE said that even if incineration was properly conducted, it would still generate dioxin on an on-going basis. As such, Greenpeace was opposed to the use of incineration from a fundamental point of view. He stressed that more details on CWTC should be provided to enable the community to decide whether the technology should be adopted. As regards Ms Audrey EU's enquiry on the compliance status of Hong Kong under SC, Dr LUSCOMBE opined that more should be done in implementing the agreement that prevention was better than cure.

12. Ir Dr Raymond HO enquired about the hazards associated with the ash and residue generated from incineration at CWTC. Mr PATTERSON said that EPD had set standards for management of dioxin-impacted materials which had to be treated to reduce their toxicity to an acceptable level before disposal at landfills. Dr LUSCOMBE said that ash resulting from the incineration process did contain dioxin and therefore should not be produced in the first place. He added that as the toxicity of dioxin was further discovered, there was a need to review the safety standards as in the case of the Homebush Bay remediation project where it was found that the allowable standard of ten parts per billion set in 1986 was no longer safe.

13. On ***BCD and GPCR***, Dr LO Wing-lok queried the need for a separate BCD treatment facility given that CWTC was already in place to deal with incineration of waste. He cautioned that such kind of facility was obnoxious and would not be welcomed in any district. Dr LUSCOMBE said that both BCD and GPCR plants were transportable and needed not be built on a large scale. Once the remediation project was completed, the plants could be relocated to another site for another project. For instance, strict licence requirements were imposed on the BCD plant used in the Homebush Bay remediation project to ensure operational safety. Operating details were also made available on a regular basis to allay public concern. The same could be adopted for the CLS project. On the feasibility of housing both thermal desorption and BCD plants on the same site at To Kau Wan (TKW), Dr LUSCOMBE said that this was the case with the Homebush Bay remediation project where thermal desorption was carried out first then followed by BCD. The two systems could work in parallel or as an integrated system.

14. On ***the PWC System***, Dr LO sought the deputations' views on the system which appeared to be very new and innovative. Mr Mars LI said that while the PWC System was relatively new, it was able to meet testing standards and had been used by the US army. It was now adopted commercially in Japan to treat ash from incinerators which would unlikely be able to meet the increasingly stringent emission standards. As the ash contained a high concentration of dioxin and heavy metals, there was a need to apply more advanced technology to treat the contaminated waste. A number of countries were also in the process of deciding on the use of the PWC System. While acknowledging that the US army was looking at non-incineration alternatives for the destruction of part of the chemical weapon stockpile under the Assemble Chemical Assessment Programme, Dr LUSCOMBE remarked that it was to his understanding that Startech's PWC System was no longer being considered under the programme as it was not able to meet the testing standards.

15. The Chairman expressed concern about the effect of radiation arising from the application of the PWC System which involved the use of radioisotopes in the treatment process. Mr Mars LI assured that the PWC System would only give rise to heat radiation rather radioactive radiation. Once the treatment process was completed, the temperature would drop quickly. The residue would be converted into vitrified substances which could be used commercially and no radioactive wastes would be produced.

16. On ***transport arrangements and contingency measures***, Ms Audrey EU recalled that concerns about the risk associated with the transport of contaminated soil from CLS to TKW and TKW to CWTC as well as the rationale for not adopting on-site treatment were raised at the last meeting on 12 March 2002. She sought the deputations' views in this respect. Ir Dr Raymond HO also enquired about the precautionary measures which overseas countries would take in transporting the waste for off-site treatment. Mr PATTERSON said that there was no guaranteed safe means of transport. It was noted that the EIA consultants had conducted a detailed analysis on the risk involved in the transport of contaminated soil. The proposed use of sealable roll-on trucks to transport the contaminated soil from CLS to TKW using a dedicated road access was consistent with the manner adopted in US, except that public roads were used in US for the transport of contaminants. Given that the actual concentration of dioxin in the contaminated soil was quite low at an average of eight parts per billion, and that only six cubic metres of soil were transported per trip, the hazard associated with spillage could be overcome with contingency plans to avoid cross contamination. As regards the transport of residue from TKW to CWTC, Mr PATTERSON agreed that this would involve a greater risk. However, the risk could be managed through the use of double containment in a redundant packaging system. Besides, the EIA consultants had proposed to limit the trips to a few times a week during non-peak hours with a vehicle each in the front and at the rear to escort the consignment. The implementation of a well thought out contingency plan which would include the availability of a crew to immediately clean up any spillage that might occur would provide assurance in the safe transport of process residue.

17. While acknowledging that the proposals set out by the EIA consultants had attempted to minimize the risk of transport, Dr LUSCOMBE cautioned that there were operational difficulties associated with off-site treatment of large amount of contaminated soil, and that any spillage enroute might give rise to a second contaminated site. Moreover, as thermal desorption might not be able to entirely separate the oily residue from moisture, emulsions could be formed which would result in a much larger volume than the original estimate of 600 cubic metres of residue. He therefore held the view that the most preferred option was to treat the contaminated soil on site.

18. On ***land contamination***, Ms Audrey EU noted that according to the Administration, the level of contamination at CLS was unexpected of a normal shipyard. She sought deputations' views on why dioxin could have been generated by shipyards. Mr PATTERSON said that the generation of dioxin might be attributed to the burning of waste in pits. Recent findings had indicated that the burning of copper wiring had resulted in detectable amounts of dioxins. Dr LUSCOMBE added that other potential sources of dioxins were polychlorinated biphenals (PCBs) used in paints on ships. These PCBs were highly contaminated with furans and dioxins. Findings of a number of studies had also revealed that open burning of common garbage such as plastic bottles had generated dioxins.

19. Ms EU asked whether the presence of dioxin at CLS could have been detected earlier and whether there was a loophole in the current legislation which had prevented the effective control on land contamination. Mr PATTERSON said that he was not in a position to comment on the existing legislation on land contamination and the control over shipyards in Hong Kong. Dr LUSCOMBE said that shipyards had not been widely recognized as a source of dioxins. He was intrigued by the level of contamination of the CLS site. It demonstrated that there were other industries that could generate dioxins and the rest of the world had learnt that shipyards were potential dioxin-contaminated sites. More vigilance should be exercised and there might be a need for legislation to control land contamination.

20. On ***liability for remediation***, Ms Emily LAU said that she was perturbed by the Administration's failure to detect the extent of contamination at CLS. She noted that the estimated cost of decontamination of around $22 million was arrived at in late 1999 when the Administration had no access to the shipyard and before the conduct of the EIA study. As it turned out, the cost had gone up more than 20 times and taxpayers had to foot the bill. She considered it necessary that those who were responsible for the failure should be held accountable, and that measures should be taken to prevent future recurrences. She then enquired about the deputations' views on the way of assessing the decontamination cost.

21. Mr PATTERSON said that as an environmental consultant, he found it most difficult to estimate the decontamination cost based on limited information. The magnitude of contamination at CLS was not envisaged until six months prior to the completion of the comprehensive site investigation. The scope of investigation was extensive and had exceeded the level of investigation done at many contaminated sites in US. The cost of investigation grew considerably because of the need to use alternative exploration technologies. The current decontamination cost for the CLS site was consistent with that for similar sites in US.

22. Dr LUSCOMBE agreed that there were difficulties in assessing the cost of decontamination, and that it would be unwise to make cost estimates based on limited information. It was also not desirable to fix the cost of remediation before an assessment was made as the level of remediation would be dictated by the budgeted amount as in the case of the Homebush Bay remediation project. He considered that the polluter-pays principle should be adopted so that whoever was responsible for contaminating the site would have to bear the remediation cost. Ms Emily LAU however pointed out that up to now, it was the Administration rather than the polluter who was prepared to bear the remediation cost. She considered it necessary to put in place a scheme whereby the polluters should pay. Mr LUSCOMBE said that while there was legislation on land contamination in Australia, it differed in different states. The legislation in New South Wales had retrospective effect to ensure that polluters could not be absolved from their liability for land contamination. However, there was currently no legislation governing land contamination in Hong Kong.

23. Mr PATTERSON said that as a geologist, he was not familiar with the environmental legislation in Hong Kong. He said that in US, environmental liability was covered under the Comprehensive Environmental Response, Compensation and Liability Act 1980 which was amended in 1984. Under the Act, a polluter (if still a viable business entity) would be liable for past pollution acts. The cost would be apportioned between the parties responsible for the pollution. In the case where there was no viable business entity, the Federal Government would accept the cost.

Meeting with the Administration
(LC Paper No. CB(1) 1271/01-02(05))

24. Ms Emily LAU sought the Administration's views on the use of alternative options, including BCD and GPCR as proposed by Greenpeace. She urged the Administration to at least assess these options and advise the public accordingly. The Director of Civil Engineering said that a comprehensive reply to the issues raised had been provided to the Advisory Council on the Environment at its meeting on 18 March 2002. He would prepare a detailed response for discussion by members at the next Panel meeting. Ms LAU requested the Administration to include in its response the liability for the decontamination cost had the magnitude of contamination at CLS been known earlier in 1999.

II Any other business

25. There being no other business, the meeting ended at 10:17 am.

Legislative Council Secretariat
24 May 2002