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Panel on Environmental Affairs and
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Background brief on Clinical Waste Control Scheme

Background

Clinical wastes refer to substances generated in clinics, hospitals, laboratories and other medial sources in connection with dental, medical, nursing, veterinary or other practices involving medical treatment, or pathological or pharmaceutical research. They are mainly in the form of -

(a) used or contaminated sharp items such as syringes, needles, scalpels or other sharp instruments;

(b) laboratory waste such as unsterilized laboratory stocks and cultures of infectious agents;

(c) human and animal tissues such as organs and body parts of human or dead animals;

(d) infectious materials which contain a specified group of lethal pathogens;

(e) surgical dressings, swabs and all other waste dripping or caked with blood, or containing free-flowing blood; and

(f) other wastes which are contaminated with the above clinical waste, or other infectious materials which may pose a significant health risk.

As clinical wastes are potentially hazardous and infectious, safety precautions are in place for handling, transporting, storing and disposing of clinical waste to protect the public, healthcare workers and waste management operators.

2. In 1998, about 2 600 tonnes of clinical waste were generated. Of these, about 1 900 tonnes were disposed of in landfills and about 700 tonnes were burnt in pathological waste incinerators in 10 hospitals prior to landfilling. A small amount of human body parts was incinerated in the two crematoria managed by the Food and Environmental Hygiene Department. To reduce the amount of clinical waste to be disposed of at landfills, the Hospital Authority (HA) hospitals, registered private hospitals and Government clinics which account for about 80% of the clinical waste produced have introduced measures to segregate clinical waste from municipal waste. As a result, HA has reduced the amount of clinical waste requiring disposal from about 12 tonnes per day in 1989 to 3.3 tonnes per day in 1999. However, practice varies among minor waste producers such as private medical practitioners and laboratories.

Clinical Waste Control Scheme

3. In October 1997, the Administration announced its intention to introduce a clinical waste control scheme to -

(a) properly segregate clinical waste to avoid mixing with municipal waste;

(b) properly store, package and label segregated clinical waste;

(c) introduce proper guidelines and precautions to ensure safe collection and transportation; and

(d) dispose of clinical waste in such a way to ensure complete destruction of dangerous pathogens, remove the risks associated with sharp materials and address community concerns about proper disposal of human body parts.

According to the Administration, 32 organizations covering the medical, dental, pharmaceutical and veterinary sectors, tertiary and research institutions as well as the waste collection trade had been consulted on the proposed scheme. Although reaction to the scheme were mixed, the major clinical waste producers were generally supportive of the arrangements.

4. The Environmental Affairs Panel and the Health Services Panel held a number of joint meetings to examine the proposed scheme. Interested parties, including Greenpeace, had been invited to express their views. Greenpeace was opposed to the proposed modification of the Chemical Waste Treatment Centre (CWTC) for medical waste incineration which was a leading source of both dioxin and mercury pollution. They considered that efforts should be made to reduce clinical waste by using more reusable items and minimizing packaging and buying products that were durable rather than disposable. Clinical waste should be segregated from the municipal waste so as to minimize the amount of wastes that required special disposal treatment.

5. According to the Administration, waste separation, reduction and reuse were the key strategies in clinical waste management, and these already formed part of the framework in the clinical waste control scheme and waste management in general. The incinerator in CWTC, which comprised a rotary kiln, a secondary combustion chamber and an air pollution control system, was designed and equipped to handle all types of clinical wastes. The rotary kiln and the combustion chamber could operate up to 1 200 degrees Celsius at which temperature all hazardous chemicals such as dioxins were destroyed. The air pollution control equipment would also be able to control the mercury level in the stack gas to be within the statutory emission limit.

6. Apart from incineration, Greenpeace considered that the Administration should explore alternative treatment technologies that could sterilize and reduce the volume of medical waste without incineration. These technologies included autoclaving, microwave systems and chemical disinfection equipment. The Administration however held the view that the environmental risks in using large-scale autoclaving, microwave systems and chemical disinfection equipment for treating clinical waste was not well documented. Such treatment methods might emit unknown volatile organic compounds which could be equally hazardous. Besides, they could not treat all types of clinical wastes such as the physical hazards of sharps and the obnoxious nature of amputated human limbs nor achieve the same volume reduction as incineration.

Assessment of dioxin emissions in Hong Kong

7. In deciding the way forward on waste incineration, the Administration subsequently commissioned a consultancy study on dioxin emissions and the health risks associated with dioxin emissions in Hong Kong. An independent international expert was also invited to review the consultant's assessments.

8. The Environmental Affairs and the Health Services Panel held another joint meeting on 5 May 2000 to examine the consultant's report on dioxin emissions in Hong Kong. Members noted that -

(a) ambient dioxin concentration in Hong Kong was comparable to the levels in many urbanized cities;

(b) dioxin emissions had been reduced over the past few years with the decommissioning of old municipal waste incinerators;

(c) less than 2% of human dioxin intake was from direct inhalation;

(d) contribution to dioxin in food from local emissions was insignificant as food items were mainly imported into Hong Kong;

(e) CWTC contributed only about 0.1% to 0.4% to the background dioxin level;

(f) incineration of clinical waste at CWTC was not likely to increase the background concentration of dioxins to any significant extent if the current emission and combustion practices were adopted;

(g) additional monitoring of dioxins should be conducted on soil, dust and vegetation in the vicinity of the existing and future facilities on a biannual basis;

(h) a food surveillance programme should be implemented on imported and locally produced food; and

(i) no one incineration facility should contribute more than 1% to the background ambient air concentration of dioxin on an annualized basis and detailed checks on the operation and control measures in incineration facilities should be carried out when the dioxin levels reaches two nanogramme I-TEQ per cubic metre of emission.

It was also noted that the independent reviewer generally agreed with the findings of the consultant, adding that diet was the most important route for exposure to dioxin, which accounted for 90% to 98% of dioxin intake according to overseas findings. He also concurred that the dioxin emissions in Hong Kong complied with the tolerable range proposed by the World Health Organization, that the records on ambient air values in Hong Kong were comparable to many other countries, and that there was a need to fill the information gap on dietary intake of dioxin in Hong Kong.

9. While appreciating that the report had provided useful data on dioxin emissions in Hong Kong, members of the Panels held the view that the Administration should explore other alternatives to incineration . The Administration recognized that with its dense population and vibrant economic activities, the amount of waste produced daily in Hong Kong was enormous. It was therefore necessary to have in place an effective waste disposal method to reduce the bulk of waste without causing damage to the environment. Although the report did provide useful information on waste management facilities, including clinical waste incineration, this had to be considered in the context of the overall waste management strategy. Besides, any major waste management proposal would be subject to comprehensive environmental impact assessment.

10. As regards the concern on the lack of comprehensive data on dioxin levels in food consumed in Hong Kong, the Administration's response was that consideration was being given to introducing a comprehensive food monitoring programme to categorize and test the food consumed by Hong Kong people. This would be a difficult exercise as most of the food items were imported in Hong Kong and the sources changed frequently.

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