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**Letterhead of GREENPEACE**

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TO: Miss Betty Ma, LEGISLATIVE COUNCIL (fax no. 2524 3802)

FROM: Clement Lam, Senior Campaigner, GREENPEACE

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**Response to the EPD's criticism of Greenpeace's  
concerns about Incineration of Clinical Waste.**

1. Greenpeace concedes that the CWTC will generate less dioxin emissions than the old on-site hospital waste incinerators. However, even the burning of clinical waste in the most sophisticated incinerator continues to repeat the same mistake inherent in all processes which burn clinical waste. Using high temperature incineration to tackle clinical waste is a complete mismatch between problem and solution. Clinical waste presents us with a biological problem. We don't want the bugs which cause disease leaving the medical facilities. However, when incineration is used to kill these bugs it creates a whole host of chemical problems, such as the production of acid gases, the liberation of highly toxic metals from otherwise stable matrices like plastics, the formation of the enormously toxic families of compounds called dioxins (PCDDs) and furans (PCDFs) and the generation of very fine particulates. While, it may be possible with very expensive air pollution control devices to minimize the emission of these substances into the environment -in the short term (the jury is still out on the long term)- it is important to recognize that not one of these chemical problems is inherent in the bugs themselves. Thus this solution forces enormous attention on problems tangential to the original task.
2. Greenpeace has argued rightly that the use of the CWTC facility will lead to a net increase in the emission of these pollutants into the environment, because the current practice in Hong Kong is to landfill clinical waste.
3. Greenpeace advocates a third approach to the handling of the large bulk of clinical waste, which avoids both the air pollution inevitable with the CWTC approach and the leachate problem of landfilling. This third approach

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involves the use of technologies which can destroy the bugs which cause disease without setting out to chemically destroy the material on which the bugs are located. Three technologies have been used in hospitals in the US, and Europe for this purpose. They are autoclaving (steam sterilization), chemical disinfection and microwaving. Not only are these alternatives safer than on-site incineration, but they are cheaper and more acceptable to local communities.

4. Moreover, these on-site treatment technologies offer another important advantage over the CWTC operation, namely they eliminate the dangers posed by transportation and multiple handling of this dangerous material.
5. Greenpeace applauds the steps already taken by the Hospital Authority to dramatically reduce the amount of clinical waste generated per person in Hong Kong hospitals. Greenpeace encourages any further steps that can be taken which minimize the use of PVC, mercury, unnecessary disposables and packaging. As Einstein observed, "A clever person solves a problem, a wise person avoids it".
6. Greenpeace notes that some of the comments made by EPD about the non-burn alternatives supported by Greenpeace are inaccurate. For example, they claim that the alternatives do not accomplish any volume reduction, eliminate the obnoxious appearance of clinical waste or remove the hazards posed by sharp objects. These claims are all false. Both commercially available chemical disinfection and microwave systems incorporate shredding devices which convert the materials into a confetti like material. This process thus removes the obnoxious appearance of the materials, eliminates the sharp hazard and reduces the volume by about 80%.
7. What Greenpeace finds disturbing about these ill-founded criticisms by the EPD is that they underline how little research they have done on these alternatives. They give the impression of being sold on incineration and defending their pet technology come hell or high water. Their bullheadedness on this issue may be as simple as their having decided that they have the CWTC already and so they might as well use it! While this may appear as a reasonable pragmatic approach to the problem it shouldn't substitute for an objective, even-handed and scientific analysis of all the options available. This is what Greenpeace and the citizens of Hong Kong have the right to expect from a government agency.
8. Greenpeace accepts that some materials, which emerge from medical facilities, are not amenable to handling by the alternatives discussed above. These include chemical wastes, radioactive waste and body parts. These materials should be carefully segregated by medical facilities and their

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disposal be determined on a case by case basis. It may turn out that burial in separate trenches at the landfill will prove adequate for body parts; that some of the chemical solvents can be recycled, and that material contaminated with radioactive isotopes will need careful storage for ten half-lives. The danger of the EPD approach is that they are offering the CWTC as "one solution fits all". It does not.

9. As far as the detailed analysis of the expected pollution from the CWTC is concerned. Greenpeace believes that the EPD is being overly optimistic. For example, the dioxin emissions they project are based upon limited emission data collected under ideal conditions. They are not allowing for upset conditions nor have they analyzed their data to determine its statistical strength. Their claims about the health effects of these dioxin emissions, without knowing the current exposures to dioxin and current body burdens of dioxin (i.e accumulated historical exposure) of the people of Hong Kong, are unscientific. Their failure to recognize the exposure to dioxin via the food chain, their failure to acknowledge that nitrogen oxides will not be removed by the air pollution control devices at CWTC, their failure to address current concerns about the impact of sub-micron particulate on human health and their failure to recognize that current mercury standards may not be protective of the unborn fetus, all underline the limited science and research that the EPD has brought to bear on this matter.
10. Greenpeace recommends that the EPD be required to perform a thorough and comprehensive analysis of all the alternatives, discussed by Greenpeace, as well as a more objective analysis of the problems of incineration before proceeding with the use of the CWTC facility to burn clinical waste. The latter should include a determination of the current and historical exposure to dioxins of the people Hong Kong as determined by the levels of dioxin in food, human fat and mothers' breast milk.