Toxic Time Bomb at Mickey Mouse's New Home – A case study of Disney Theme Park in Hong Kong

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Abstract
Contaminated land is known to be dangerous to human beings, flora and fauna. There had been several contaminated land incidents that caused major public concerns. The most notable one was the Love Canal incident in the USA that eventually led to the enactment of the Comprehensive Environmental Response, Compensation And Liability Act (CERCLA) by the Carter Government. Critics view the serious problems associated with contaminated land as a toxic time bomb in land (Pearce, 1992).

In November 1999, the Hong Kong government reached an agreement with the Walt Disney Company to build a 126-hectare theme park on Lantau Island in the former British Colony. In connection with the construction of roads and other infrastructure linking to the future park, a shipyard was compulsory acquired by the government. It was later found that demolition of the shipyard will involve the removal of around 87,000 cubic metre of dioxin laden contaminated soil. This paper aims at reporting this toxic time bomb and its impacts, and highlights the lessons to be learned.

Key words
Disney theme park, dioxin, remediation, environmental protection

Introduction

Contaminated land is one of the serious environmental problems that has caused alarm among the people. Apart from being dangerous to flora and fauna, it also threatens human health and safety, and may lead to legal and financial liabilities. The problems of contaminated land do not go away even if the pollution activities are discontinued.

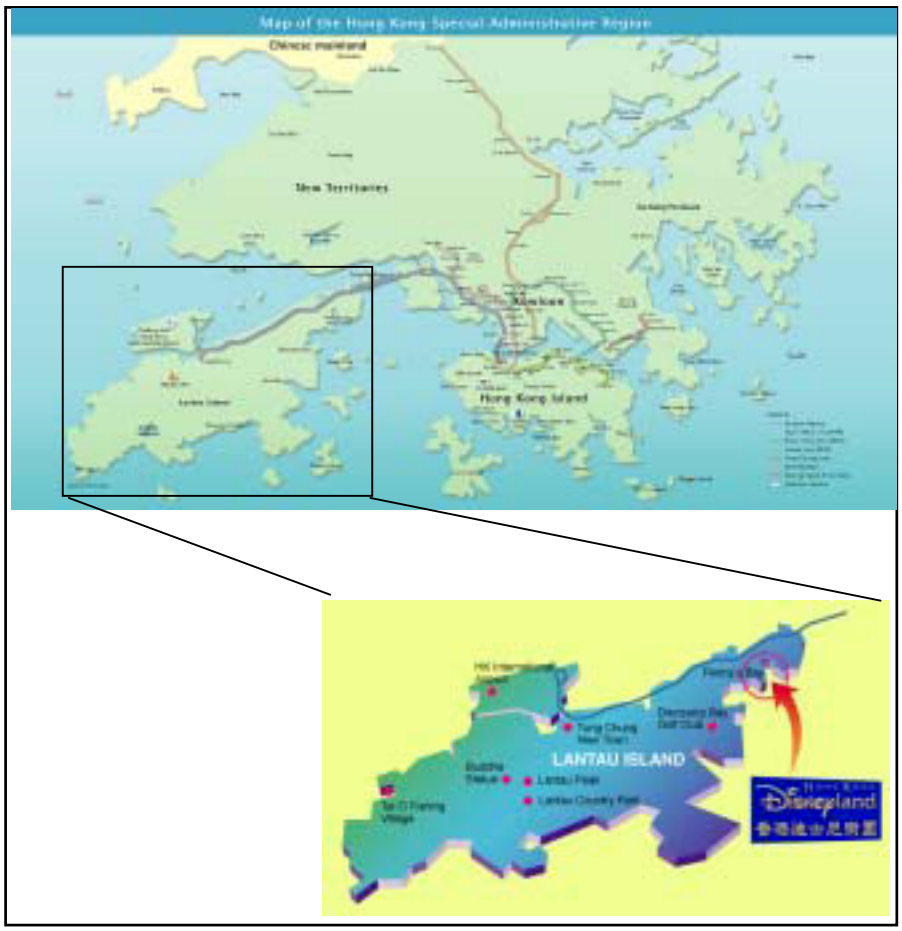
There had been several contaminated land incidents that caused major public concerns. The most notable one was the Love Canal incident in 1977 in the USA that eventually led to the enactment of the Comprehensive Environmental Response, Compensation And Liability Act (CERCLA) by the Carter Government. Besides the USA, there were similar incidents in other countries as well. For example, the Lekkerkerk incident in the Netherlands was a serious land contamination incident in the 1980s. Eight hundred residents had to evacuate from their homes that were built on a former refuse tip at Lekkerkerk near Rotterdam (Pearce, 1992). In Australia, there was also a similar incident in the late 1980s. Residents of Kingston, a Brisbane suburb, had to abandon their homes after black sludge began oozing into their back yard. Investigation revealed that the suburb was built on a hazardous waste dump used by an old gold mine (Egerton, 1990). Critics view the serious problems associated with contaminated land as a toxic time bomb in land (Pearce, 1992).

The Hong Kong economy has been declining since the Asian Financial Crisis in 1997. As a measure to boost the economy, the Hong Kong Special Administration Region Government (HKSAR government) signed an agreement in November 1999 with the Walt Disney Company to develop a 126ha theme park on Lantau Island, the largest outlying island in Hong Kong. In connection with the construction of roads and other infrastructure linking to the future park, a shipyard was compulsory acquired by the government. It was later found that demolition of the shipyard will involve the removal of around 87,000 cubic metre of dioxin laden contaminated soil. This paper aims at reporting this toxic time bomb and its impacts, and highlights the lesson to be learned.

Hong Kong Disney theme park

In order to boost the economy and attract foreign investments, the HKSAR government has put forward a number of measures to boost the economy including signing an agreement in November 1999 with the entertainment giant Walt Disney Company to develop a 126ha theme park in Penny's Bay on Lantau Island, see location plan below.

The theme park site, due to open by early 2006, will be accessible by rail, highway and ferry. Connected by a new rail link to the existing Tung Chung line, the park is about 10 minutes from the Hong Kong International Airport and is about 30 minutes from downtown Hong Kong (ISD HKSARG 2000 & Hong Kong Disneyland, 2002).



Source: Based on ISD HKSARG, 2002

The estimated development cost of the theme park is HK$14.1 billion (US$1.8 billion). The investment is split 57:43 between HKSAR government and Disney (Forest Conservation Portal, 2002). The total cost to the HKSAR government is HK$22.45 billion (US$2.9 billion), comprising:

1. HK$3.25 billion (US$ 420 million) equity
2. HK$5.6 billion (US$720 million) loan to the project company, to be repaid with interest over 25 years
3. HK$13.6 billion (US$1.75 billion) in land formation and infrastructure costs.

(ISD HKSARG, 2002)

The HKSAR government claims that the project will bring the following benefits to Hong Kong's economy:

1. "The Hong Kong Disneyland project will generate (at today's prices) an estimated HK$148 billion [US$19 billion] boost to the economy over a 40 year period in terms of value added, such as employment income and profits for small and large companies in Hong Kong.
2. Attendance of over 5 million is expected in the park's first year of operation, rising to 10 million after about 15 years.

3. Hong Kong Disneyland is expected to attract 3.4 million incoming tourists (including 1.4 million additional tourists) in its first year, rising to 7.3 million (including 2.9 million additional tourists) after 15 years.

4. Additional spending by tourists should amount to some HK$8.3 billion [US$1.06 billion] in the first year of operation, rising to HK$16.8 billion [US$2.2 billion] per annum in Year 20 and beyond.

5. Hong Kong Disneyland will herald a new era for Hong Kong's tourism industry, and enhance Hong Kong's image as a vibrant and cosmopolitan international city.

6. Disney's choice of Hong Kong for its third international theme park (after Tokyo and Paris) is a vote of confidence in our city and our future by the world's best-known and most prestigious theme park and Entertainment Corporation."

(ISD HKSARG, 2002)

The toxic time bomb

In connection with the Disney theme park development, the government needs to provide the necessary infrastructure to support the theme park. One of the infrastructure projects is to build a highway linking the theme park to the existing highway system on Landtau Island. The construction of the new highway and other infrastructure requires the compulsory acquisition of the land occupied by the Cheoy Lee Shipyard (CLS).

The land concerned has an area of 19ha and is situated on the critical path to the theme park. CLS started ship building business on the site in 1964. The shipyard had since built, maintained and repaired sea going vessles ranging from small boats to passenger ferries for several decades. The ship building materials used included fibre glass, plastics and metal (Mingpao News, 2002).

Before the land acquistion by the government, the shipyard business was already suspended for many years because the owner had relocated the business to Mainland China. The proposed compulsory land acquisition required the authority to follow the procedures prescribed in the Roads (Works, Use and Compensation) Ordinance (Chapter 370), the Railways Ordinance (Chapter 519) and the Lands Resumption Ordinance (Chapter 124). The first two laws have provision to empower the acquiring authority to enter private land for site investigation prior to compulsory acquisition, however, the power is not available in the third law. Since it would take a long time to follow the statutory procedures and might delay the Disney project, the government decided to acquire the land by agreement with the shipyard owner. CLS initially asked for a compensation of HK$10 billion (US$1.3 billion). The compensation amount was finally agreed at HK$1.5 billion (US$200 million) (Mingpao News, 2002).

During the negotiation for land acquisition, the shipyard owner refused to permit the government to enter the premises to carry out site investigation. In this circumstance, the government could only carry out site investigation outside the boundaries of the shipyard. Evidence of minor pollution was found from the investigation and the government reserved HK$30 million (about US$3.8 million) for site remediation. After physically taking over the site, detailed site investigation was carried out and an environment impact assessment report was prepared. It was found that the site was polluted by the contaminants shown in the table below:

Contaminant Type(s)	Estimated Volume (m^3)
Metals only	48,000
TPH/SVOCs	700
Metals and TPH/SVOCs	8,300
Dioxins and Metals/TPH/SVOCs	30,000
Total Estimated Volume	87,000

Source: MCAL 2002, Table 2.1
Note: TPH = Total Petroleum Hydrocarbon
SVOCs = Semi-volatile Organic Compounds

Among the tabled contaminants, dioxin causes the biggest concern because of its extreme toxicity. It is "one of the most toxic chemicals known" (Dioxin Homepage, 1998). Dioxin is a general term for a group of hundreds of toxic chemicals, such as PCB, that will stay in the environment for a long time. This group of toxic chemicals is formed by burning chlorine-based chemical compounds with hydrocarbons. Dioxin affects human health in the following manner:

1. Reducing sperm count;
2. Inducing testicular cancer;
3. Causing endometriosis (a painful growth outside the uterus);
4. Increasing the chance of getting breast cancer
5. Causing damages to foetus.

(Dioxin Homepage, 1998)

In general, dioxin affects human health through the food chain. However, human health can also be seriously affected through breathing or contact with dioxin laden air. Dioxin has a persistent characteristic and is difficult to break down. Soil samples from the CLS site show that the content of doxins in the soil is 109 times higher than the safe standard of 1 part per billion TEQ (i.e. dioxin Toxic Equivalent) (Mingpao News, 2002). If the shipyard is not decommisioned, it will pose long term risks to the health of workers and visitors to the theme park (Reuters, 2002).

In the Environmental Impact Assessment Final Report, the environmental consultant recommended excavation of all contaminated soil. The 30,000m^3 of dioxin contaminated soil will then be remediated by a thermal desorption process at a new treatment plant to be built in To Kau Wan (see location plan below).

Source: HKSAR Lands Department

The dioxin contaminated soil will be transported to the thermal desorption treatment plant by sealed container trucks. It is estimated that there will be about 50 shipments per day and it will take 6 months to complete the consignment. The 600m^3 of residual generated will finally be transported by trucks to the Chemicial Waste Treatment Centre on Tsing Yi Island for destruction by incineration.

The proposed remediation proposal has caused deep concern among the people and Green groups. They query why the government does not choose insitu remediation and worry about the safety of transporting contaminated soil by road to the treatment plants. Besides the criticisms, the cost of remediation is huge. Based on findings from the preliminary site investigation outside the shipyard boundaries, the government only reserved a budget of HK$30 million (about US$3.8 million) for the remediation. Now the full extent of land contamination is known and the government faces a remediation bill of about HK$400 million (about US$51 million) (Agence France-Press, 2002). It not only increases the cost of providing infrastructure for the theme park but also causes embarassment to the government.

According to the remediation proposal, it will take more than 1 year to treat all cotaminated soil. The whole process is expected to complete by March 2006. If the first stage of the theme park development is completed on time in early 2006, it is possible that the operation of the theme park will co-exist with the remediation process. While there may be no real threat to workers and visitors to the theme park, it nevertheless will tarnish the image of the park.

Problems with current land contamination management practice

Before the development of the shipyard in 1964, the land was ordinary farm land. Apparently contamination of the CLS site was caused by the shipbuilding activities. Subequent investigations found that the dioxins on the site might have been caused by buring of plastic materials on site. However, there is little action that the government can take against the previsous shipyard owner.

In Hong Kong, the power to control and prevent land contamination is fairly fragmented. A number of government departments may be involved in regulating land contamination under different laws. For example, the Agriculture, Fisheries and Conservation Department (AFCD), Environmental Protection Department (EPD), Food and Environmental Hygiene Department (FEHD), Lands Department (LD), and Planning Deparment (PD) all have powers within their jurisdiction to deal certain aspect of land contamination issues. However, none of them is the ultimate authority in this matter. In the subject case, the AFCD and FEHD are clearly not relevant because the shipyard has nothing to do with agriculture, fisheries, country parks; and food hygiene.

At present, there are 7 environmental protection laws enforced by the EPD in Hong Kong:

1. Air Pollution Control Ordinance (Chapter 311)
2. Dumping at Sea Ordinance (Chapter 466)
3. Environmental Impact Assessment Ordinace (Chapter 499)
4. Noise Control Ordinance (Chapter 400)
5. Ozone Layer Protection Ordinance (Chapter 403)
6. Waste Disposal Ordinance (Chapter 354)
7. Water Pollution Control Ordinance (Chapter 358)

There is no specific law regulating land contamination (Mak M.L.S., 2002). Among the laws listed above, the Waste Disposal Ordinance and Environmental Impact Assessment Ordinance are most relevant to the subject case. The Waste Disposal Ordinance was passed in 1980. In essence, it prohibits dumping waste in public places or on government land, or on private premises without the consent of the owner or occupier (EPD HKSAR, 2002). However, it does not have retrospective power to punish polluters for illegal waste disposal. As mentioned above, the business activities of the shipyard had been suspended for a long time and it was difficult to tell whether the pollution was made before or after the enactment of the law. On the other hand, the HKSAR government is now the landowner and may have inherited the legal liabilities from the previous landowner. It is therefore unlikely for the EPD to bring a test case against the HKSAR government.

The Environmental Impact Assessment Ordinance (Cap. 499) was passed in 1997 and came into operation in 1998. It only applies to designated projects through the application of the environmental impact assessment process and the environmental permit system. As mentioned above, in order to build the infrastructure for the Disney theme park, it is necessary to decommision the shipyard. Decommissioning a shipyard is a designated project under the Ordinance.

In Schedule I of the Ordinance, "decommissioning" means “ceasing production and demolishing an existing plant for the development or redevelopment of the site”. The previous landowner only suspended the shipyard operation and there was no evidence to show that they intended to decommission the shipyard. Accordingly it is difficult for the government to take legal action against the polluter for failing to comply with provisions of this law. After all, it is the current owner, i.e. the HKSAR government, that wants to decommission the shipyard. It thus has the legal responsibility to prepare an environmenal impact assessment report of the site for the approval of the EPD.

Apart from the environmental protection laws, the government may also take action against polluters under conditions of land grant documents. Hong Kong adopts a leasehold land tenure system (Chan, 1999). Every plot of land in the territory is subject to a land grant document issued by the government. In the early days, environmental issues were not a concern of the government or the public. When the community became more concerned about environmental issues in the 1960s, the Hong Kong government started to incorporate enviornmental protection clauses into land grant documents. However, these clauses are fairly vague and do not specifically cover land contamination issues. The land grant document of the CLS site contains the following environmental protection clause:

> “The grantee shall not permit sewage or refuse water to flow from the lot on to any adjoining land or allow any decaying, noisome, noxious, excrementitious, or other refuse matter to be deposited on any portion of the lot and shall see that all such matter is removed daily from the premises in a proper manner.”

Land grant documents generally contain a clause to allow the government to enter the land for inspection. However, it does not authorise the inspector to carry out site investigation (Ng F., 2002). This is why the government could not enter the site to carry out site investigation prior to acquiring the subject land. The HKSAR government is now seeking legal advice to see if the former owner had breached any environmental protection provisions of the land grant document and whether it can ask the previous owner to pay compensation (Mak M.T.S., 2002).

Land contamination in Hong Kong. may also be controlled through conditions attached to town planning approval. Urban areas in Hong Kong are covered by the respective statutory plan called the “outline zoning plan (OZP)”. In general, developments or redevelopments that comply with land uses premitted by the OZP need not have separate approval from the Planning Department. Planning permission is required only when rezoning is necessary. When granting rezoning approval, the Planning Department may attached environmental protection clauses to the conditions of the approval document. For areas not covered by an OZP, planning permission is required if the development or redevelopment falls within a Development Permission Area (DPA) (Ng A., 2002). For the subject shipyard, it is not within an OZP area or a DPA and that there the previous landowner did not prepose any development or redevelopment proposal. The Planning Department thus has any power to deal with the land contamination issues on the site.

Given the fragmented nature of the current contaminated land management practice, the legal loop-holes and the unique character of the subject land acquisition, there is at present no legal action against the former shipyard owner.

Walt Disney’s Liabilities

In the USA, land contamination is strictly regulated under the Comprehensive Environmental Response, Compensation And Liability Act (CERCLA). Apart from the polluters, landowners, including financiers who are involved in the direct management of the polluters’ business, may be held liable for land contamination (Chan, Jefferies & Simons, 1998). In the subject land contamination incident, while Walt Disney is an American company and a

partner of the theme park development, they are not liable under CERCLA because they are not the polluters or landowners of CLS, and that Hong Kong is outside the jurisdication of CERCLA.

The company is also not liable under Hong Kong laws for remediation of the site even though it is a partner of the joint venture theme park scheme. Under the joint venture agreement, the HKSAR government is responsible for providing land and infrastructure for the theme park development. Similar to other compulsory land acquisitions for public purpose in the territory, the CLS site becomes government land after acquisition and does not form part of the theme park asset. Accordingly Walt Disney has no legal obligation to remediate the site.

Lessons to be learnt

The land contamination issues on the CLS site has cost the HKSAR government dearly. The remediation cost is now more than 10 times the original budget. The government has to try its best to get extra money to fund the remediation works. Besides money matter, there are criticisms on the government's performance in handling the problems. The incident not only causes a big embarassment to the government but also tarnishes the international image of Hong Kong.

Hong Kong has never been a heavy industrial base, the public and the government generally do not consider land contamination a serious threat (Tsing M.M.K., 2002). Against this background, the government does not treat it as an important issue and the regulation of land contamination is very fragmented. Although serious environmental problems are rare and that the overall environment is acceptable, the CLS incident is a wake up call to the HKSAR government.

In the past, the absence of statutory obligations did not encourage developers to serioiusly consider land contamination issues. Nevertheless, they knew that land contamination might affect property values and often tried to keep secret any finding of contaminated soil on their building sites (Leung K.L., 2002). Remediation works were often carried out without due care or consultation with the Environmental Protection Department (EPD). However, this practice has changed after the operation of the Environmental Impact Assessment Ordinance in 1998. By virtue of the ordinance, if a development or redevelopment is a designated project, the developer needs to submit an environmental impact assessment report to the EPD for approval. Accordingly, more enviornmental problems similar to the CLS incident may be unearthed in the future.

In the CLS incident, it appears that the biggest problem is that the government has no power to enter the premises to investigate potential environmental problems prior to the land acquisition. As a result, the reserved funding for the remediation works is far less than the real cost required. Apparently the current power of the government is not inadequate and needs to be reviewed.

The subject land contamination incident could be partly due to the ignorance of the shipyard operator about the impact of on site disposal of industrial wastes, and partly due to the remote location of the shipyard that unlawful waste disposal is difficult to be detected by the authority. The current fragmented approach to land contamination management creates loop-holes for offenders to escape liabilities.

The CLS land contamination incident clearly shows that there needs to be an ultimate authority to deal with land contamination issues. On the other hand, the environmental laws need to be reviewed and tightened up. Experience from developed countries such as Australia, the Nederlands, the UK and the USA shows that there needs to be specific legislation and a single enforcing authority to deal with land contamination issues. While land contamination issues are relatively minor in Hong Kong and it may not be necessay to enact dragconian

environmental laws like those found in certain developed countries, at least the relevant authority should be given adequate power to take the initiative to investigate suspected land contamination activities and prosecute the polluters.

Conclusion

The Disney theme park project is one of the measures to revitalise the Hong Kong economy. Its success is hinged on a number of factors, including environmental issues. The discovery of a large amount of dioxins on the CLS site has caused a lot of concerns among the Hong Kong people and potential visitors to the theme park. The government needs to address the issues promptly and carefully.

Hong Kong is a dynamic city and redevelopment of former industrial sites for alternative uses is inevitable. Hong Kong has never been a heavy industrial base, and the chance of having large scale of land contamination may be remote. Nevertheless land contamination similar to the CLS incident may be unearthed in the future when more former industrial sites are redeveloped.

At present, the CLS site is being decommissioned and remediated accordingly to the recommendations in the environmental impact assessment report. The dust of this land contamination incident appears to have settled. Nevertheless, the incident highlights that the current practice of land contamination management in Hong Kong is not acceptable. There needs to be a more effective approach for the government to detect and monitor land contamination activities and to take legal actions against the polluters/landowners. Also the government needs to have adequate power to enter premises for site investigation prior to compulsory land acquisition, including land acquisition by agreement. Experience from developed countries shows that there needs to be a specific law and a single authority to deal with land contamination issues. Perhaps the HKSAR government should borrow the experience from its overseas counterparts and formulate a suitable approach to tackle land contamination problems in Hong Kong.

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