A Look at Brownfield Management Issues in Southeast Asia

IN the mind of the public, environmental engineering has often been associated with wastewater management, as well as water and air pollution. However, that changed in 2001 when the first Brownfield Conference was organised in order to identify some of the significant issues associated with brownfield management.

Since then, there have been some significant improvements in terms of the introduction of brownfield management policies and guidelines. JURUTERA sought the opinions of Prof. Sr. Ir. Dr Suhaimi Abdul Talib, Assistant Vice Chancellor from Universiti Teknologi MARA, Puncak Alam campus, and Ir. Dr G. Balamurugan, Managing Director of ERE Consulting Group, on this matter.

Ir. Dr Balamurugan stated that one of the major concerns regarding brownfield management revolves around the presence of many unidentified or forgotten contaminated sites throughout the country. However, he believed that this problem is not unique to Malaysia as many former waste dump and industrial sites throughout the Southeast Asia region have been developed without any remedial action.

In Malaysia, Prof. Sr. Ir. Dr Suhaimi pointed out that some of these issues remain unresolved due to low awareness by the general public, service providers, consultants and regulators, which has resulted in a lack of specific legislation on contaminated land.

In recent years, the Department of Environment (DOE) has taken several initiatives to resolve the problem. The latest initiative involved the introduction of three new guidelines at the recently held Brownfield Conference, namely, the Guidelines for Assessing and Reporting Contaminated Sites, Guidelines for the Remediation of Contaminated Sites and Guidelines for the Planning and Management of Contaminated Land. Although at present these guidelines are voluntary in nature, they will be made mandatory in the next few years.

Prof. Sr. Ir. Dr Suhaimi Abdul Talib
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According to Prof. Sr. Ir. Dr Suhaimi, SIRIM has also introduced a site remediation guideline entitled, "Developing and Implementing Early Action Guidelines for Site Remediation", which is the first Malaysian Standard (MS2072:2008) that aims to provide guidance for assisting in the development, selection, design and implementation of partial, short-term or early action remedies undertaken at sites of waste contamination for the purpose of managing, controlling or reducing risk posed by environmental site contamination.

He noted that the National Urbanisation Policy (NUP) 2006 which was formulated by the Federal Town and Country Planning Department includes key policies that are relevant to soil remediation (Hashim, 2006). He said, "Policy Number 6 of the NUP calls for urban development as a priority for development strategies in urban areas which includes the implementation of infill development in potential areas; identification and registration of contaminated land; rehabilitation of contaminated sites prior to being developed; and the promotion of the private sector's involvement in urban redevelopment by provision of incentives and joint ventures with government agencies."

However, despite the introduction of these guidelines, Ir. Dr G. Balamurugan pointed out that brownfield management has not yet become a priority in Malaysia. He said, "We do not have specific laws to deal with brownfields. The priority right now would be to develop an inventory of brownfield sites in the country."

Prof. Sr. Ir. Dr Suhaimi concurs, adding that, "To date, the country has yet to establish a National Register of Contaminated Land which should include a classification of contaminated land based on the contaminant. This should be introduced as soon as possible if we are to address brownfield management issues effectively."

The lack of urgency in addressing these issues could stem from the fact that many are unaware of the consequences. Prof. Sr. Ir. Dr Suhaimi stated that development on contaminated land will expose the public to long term health risks. In addition, such development can lead to the devaluation of the property value in the area as well as accelerate the use of remaining greenfields.

Take, for example, certain areas within Shah Alam where there is a mix of industrial, commercial and residential development. The lack of legislation means that industrial businesses in the area cannot be taken to task if their land was found to be contaminated. The effect can be disastrous as developers may unwittingly develop the contaminated land for residential development once these businesses cease to operate.

Ir. Dr G. Balamurugan pointed out that, "Taking remedial action after a structure or facility has been built on top of contaminated sites will be very expensive. There is no doubt that the health impact on people living at these sites will be significant although this will be difficult to detect in the short term."

As such, Prof. Sr. Ir. Dr Suhaimi hoped that the guidelines by the DOE will become regulation by the middle of the 10th Malaysia Plan. This, he believed, will lead to two major developments. Firstly, it could lead to capacity building for local

engineers who specialise in the area of brownfield management. Secondly, a landowner or occupier will be made liable if contaminants are found on their land.

He stated that, in general, the effort to deal with the brownfield management issue is an ongoing process. Although there has been much improvement compared to the situation 10 years ago, he believes that much more could be done.

For example, he pointed out that the NUP 2005 serves as the policy that addresses this issue from the planning point of view. However, there is no specific policy on assessment, screening and technology. He suggested that a more effective enforcement of this policy would help improve the situation.

Efforts by other agencies include initiatives by SIRIM which is in the process of drafting several more standards related to this issue. Initiatives by the DOE included the Environmental Quality (Scheduled Wastes) Regulations 2005 (EQA (SW) R 2005), which came into force on 15 August 2005, followed by a significant landmark in 2006 where a section was created within the Hazardous Substances Division to look into the issue of contaminated lands. This section aims to provide more focus and better governance on scheduled waste classification, generation, transportation and treatment.

Prof. Sr. Ir. Dr Suhaimi believed that learned societies such as the Institution of Engineers, Malaysia, also has a role to play by promoting conferences, courses and workshops on brownfield management. He said, "This series of Brownfield Asia Conferences must be continued. The question of whether the conferences are generating income for the institution must take second place. The primary role of these conferences is to promote awareness and the change of practices through the development of regulatory instruments and R&D activities."

The majority of brownfield management failure in the country as reported by the media is mainly due to ineffective enforcement by the authorities. According to Prof. Sr. Ir. Dr Suhaimi, in 2004, Ir. Lee Heng Keng, Deputy Director General (Operation) of the DOE, reported that the main source of contaminated land was attributed to the illegal dumping of scheduled wastes. The situation is considered critical as more than 10 cases of illegal dumping per year are being reported, often occurring in remote areas.

Lack of awareness and greed have been identified as some of the major factors for these illegal dumping activities. Further, it was also found that many industrial premises have yet to provide any assessment on soil contamination.

Part of brownfield management consists of the adoption of remediation technology to ensure that contaminated land can be redeveloped. Ir. Dr G. Balamurugan said, "There are hundreds of different technologies for brownfield remediation that have been developed throughout the world. What is important for Malaysia is to adopt a technology that is best suited for our local conditions and the nature of contamination."

Prof. Sr. Ir. Dr Suhaimi has a slightly different point of view. He said, "I believe the country needs to develop techniques on screening and assessment, especially those related to vapour intrusion, before we focus on remediation technology. Remediation is an expensive business. It is important that the screening and assessment methods are refined so that we can deal with the right problems."

He added that remediation technology is generally divided into ex situ and in situ treatment, with the latter gaining more support in recent times. Bioremediation is also emerging as a potentially economical option for brownfield remediation, while the use of nano and bio technology for brownfield remediation has also developed quite rapidly. One of the latest technologies involves sustainable remediation, which not only focuses on the effectiveness of the method, but also the impact of the method on the environment.

According to Prof. Sr. Ir. Dr Suhaimi, in Berlin, Germany, certain areas of the city have yet to be redeveloped since being contaminated by the hazardous bombs of World War 2. Although the city council has issued contracts for the remediation of these areas, such efforts can take between five to ten years.

On whether there have been any successful case studies of brownfield development, Ir. Dr G. Balamurugan said, "Many former dump sites have been successfully rehabilitated in Malaysia. However, these are usually expensive ventures. As such, this is now a question of how much resources the government can allocate for the rehabilitation of brownfields in the country."

Prof. Sr. Ir. Dr Suhaimi pointed out that some of the brownfield redevelopment sites that are being perceived to be successful include Sunway Lagoon and its surrounding areas, the Mines and KL Sentral. He said, "These projects were carried out by major players in the industry, as such these players have a reputation to maintain. The redevelopment of these projects would have been carried out in accordance to some in-house or foreign guidelines." However, the question is, is post remediation monitoring being done for such projects? If so, are the results being made accessible to the public or, at the very least, the regulators? ■