

Welcome to the Spring/Summer 2003 edition of the HKWMA newsletter. For those who have not been able to attend the technical seminars in the last few months, whether because of SARS or just other commitments, our members have submitted a number of technical write-ups to fill you in on what you missed. Some of the scheduled upcoming technical seminars include *Towards Zero Waste – A Sustainable Construction Industry in Hong Kong* and *Conversion of Waste Tyres into Construction Materials* to name a few.

Remember, this Newsletter requires your participation. We would like to hear your experience in implementing good waste management practices in Hong Kong or overseas. If you have any interesting stories to tell, or news to share, please write to us at newsletter@hongkongwma.org.hk

Membership News

A big welcome to all our new members who have joined us since January 2003.

Great news for all Organization Members! The Association will be issuing certificates to your organization with the renewal of your membership in the coming 2003/2004 session. Look out for further information on our website www.hongkongwma.org.hk and at our social cocktail on July 12 2003.

Updating your personal information? If there are any changes to your email address or any other contact information, please send a note to the Membership Secretary, Mr. Joe Zorn by fax (2497-4290) or by email membership@hongkongwma.org.hk so that we can keep you updated of HKWMA happenings.

Dry and Wet Waste Separation – Recycling at the Source

This 12-month pilot programme was launched in March 2003 at four housing estates in the Eastern District of Hong Kong with a kick-off ceremony led by Dr. Sarah Liao. Under this programme, the residents at the participating housing estates are encouraged to separate out their household waste into dry and wet components. This mode of waste recovery helps to minimize cross-contamination between the dry and wet wastes at the source and thereby increases the quantity of recoverable waste, however, this recovery system requires more work by the residents.

The objectives of this pilot programme are:

- To test this alternative mode of waste collection and sorting in further enhancing the waste recovery rates and reducing waste.
- To make it more convenient for residents to separate waste.
- To encourage residents to separate waste at home.

To find out more, please see EPD's website:

http://www.epd.gov.hk/epd/english/news_events/current_issue/dry_wet_waste.html

Technical Seminars

Total Recycling: Future-Oriented Resource Management

By H. L. H. TSE

On 26 August 2002, a seminar on future solution to waste management was jointly organized by the HKWMA and the Environmental Discipline of the HKIE.

Owing to the continual increase in global population, the search for green waste management towards sustainable development is currently under urge. Apart from avoiding and minimizing waste generation, waste recycling is considered to be the second best option in diverting waste from landfilling.

The issue of waste management is of concern in Germany as it is in many places. In an attempt to minimize the quantity of solid waste, Germany placed an ordinance on packaging in 1991. This ordinance placed the responsibility to minimize waste back on the manufacturers. By requiring manufacturers to be responsible for the entire life cycle of their products, the Green Dot System was introduced in the same year to facilitate the industries' compliance with the ordinance concerning waste management.

Under the Green Dot System, a "Dual System" (Dual System Deutschland, DSD) was established as a comprehensive and publicly accessible system. After being members of the DSD, manufacturers or retailers are exempted from their individual obligation to collect and recycle sales packaging. As a non-profit organization, DSD is financed by the license fees paid by the manufacturers or retailers for the use of the Green Dot trademark on their packaging. This fee has already taken the actual waste management costs into account and is governed by the type, quantity, and volume of the packaging material to be handled. It has to be noted that the DSD does not own or operate any sorting and recycling plants itself. On the contrary, it organizes a second (dual) waste management system parallel to the public refuse collection for which its task involves nationwide collection and subsequent recycling of sales packaging.

In principle, the DSD adapted two basic waste management systems to already existing municipal collection systems: the kerbside system and the bring system. In the kerbside system, yellow bins or bags containing lightweight packaging manufactured from plastics, composites, aluminum and tinplate, are collected from individual households by DSD waste management partners. On the other hand, the bring system encourages consumers to take the collected packaging materials to nearby recycling stations to be further transported to sorting and recycling plants.

To guarantee high sorting purity, a modern fully automatic sorting plant is recently developed by the DSD which is capable for the dry-mechanical sorting of packaging including plastic, tinplate and aluminum by means of near-infrared technology (NIR), magnetic separation as well as eddy-current separation accordingly. The incorporation of NIR technology enables rigid packaging such as bottles, cups and trays to be finally sorted into the following types of plastic viz. polyethylene (PE), polypropylene (PP), polystyrene (PS) and polyethylene terephthalate (PET), with a sorting purity of up to or more than 95 percent. The sorted plastics are reprocessed into regranulates which offer the plastics industry a high quality and marketable alternative to virgin material.

Effective sorting and recycling technology as well as optimized management structure enable recycling cost to be lowered. Any surplus income resulting from the payment of the license fees due to the drop of processing cost will either be returned to the licensees in the form of cost reductions or be invested in the ongoing development of the system, which in turn, not only increases the economic efficiency in favor of its customers but also flourishes the packaging recycling industry for the provision of high-quality recycled products at reasonable prices. Nowadays, the annual cost of the recycling of packaging under the Green Dot System is approximately 1.4 billion euros compared to 3.9 billion euros when the system was firstly introduced in 1991.

With concurrent market creation for recycled products, the Green Dot system offers an economically practical solution for recycling of packaging material and is therefore highly attractive as one of the long-term solutions towards sustainable development.

Evaluation of Waste Management Options: A New, Goal-Oriented Approach Emphasizing Long-Term Aspects of Landfilling

By Mandy IP

The seminar was held on 28 August 2002 and the speaker was Dr. Paul H. Brunner. The objective of the course was to introduce a system which evaluated different options of waste management with regard to long-term environmental protection, resource conservation and costs.

During the seminar, three waste management scenarios, landfilling of untreated waste, incineration and mechanical-biological treatment, were compared with the "status quo" based on three different approaches: Material Flow Analysis (MFA), Cost-Benefit Analysis (CBA) and Modified Cost-Effectiveness Analysis (MCEA).

During the seminar, concepts such as material balance for the "status quo" using mass-balance principle, modelling of landfill process and long-term substance balance of landfill were introduced.

The goals for waste management were set after the system has been developed. These goals were further divided into sub-goals and weighing of all these goals and sub-goals were listed. Dr. Brunner believed that the weighing varied among different countries because they have different understandings and values on environmental protection work and sustainable development. Examples of main goals were protection of men and the environment, conservation of resources and maintenance-free landfills. Sub-goals included minimization on air, water and soil pollution.

The results of scenario evaluation revealed that incineration was the preferred waste management option, while landfilling yields lowest priority among selected waste management options because of its long-term emission effects on human and the environment. All evaluation methods confirmed that if long-term effects were considered, the goals of waste management were reached more efficiently by thermal waste treatment scenarios than by mechanical-biological treatment or by landfilling without pre-treatment.

For the conclusions regarding methodology, it was revealed that both CBA and MCEA methods yielded similar conclusions, which may mean that people consider cost as an important factor when choosing viable waste management options.

The seminar was an interesting and thought-provoking one. It is important for more people to know more about the current waste management situations in Hong Kong and consider seriously on different waste management options. This is the only way in which Hong Kong society can seek for consensus on effective waste management options to be implemented.

Corporate Responsibility and Transparency: Expectations, Trends and Sustainability Reporting

Anne Copeland Chiu, a Principal Consultant with BMT Asia Pacific Limited and a member of the Global Reporting Initiative's Stakeholder Council, presented to members of the Hong Kong Institution of Engineers and the Hong Kong Waste Management Association on the subject of *Corporate Responsibility and Transparency: Expectations, Trends and Sustainability Reporting*. The presentation highlighted how global sustainability challenges and the increasingly important role of business in the pursuit of sustainable development are driving the demand for increased transparency and accountability within the business sector.

Anne set the scene by presenting the unsustainable state of the world's people and environment that impact global sustainability and underpinned the discussions at the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa. Anne then identified significant issues and results arising from WSSD that are of relevance to Hong Kong, including the need for sustainable consumption and production, energy and resource use, and waste management. She highlighted the role of the waste management sector in providing sustainable waste management services that can contribute to economic development, environmental protection and quality of life.

The overall role of business community in the pursuit of sustainable development was also discussed, and Anne noted how the business community had been actively engaged at WSSD and recognised by UN and world leaders. In this regard, the WSSD *Plan of Implementation* specifically called on business to adopt ISO 14001 and to prepare sustainability reports in accordance with the Global Reporting Initiative's *Sustainability Reporting Guidelines*. Anne outlined how the *Guidelines*, that evolved from a multistakeholder process involving business, labour and other NGOs, have become the internationally recognised benchmark for corporate sustainability reporting. Recognising that only a third of the Hang Seng listed companies disclose limited environmental or social information, she noted the urgent need for Hong Kong businesses to respond to growing demands from investors, stakeholders and the community and meet international best practice in corporate responsibility, transparency and accountability.

Rose Garden – Total Waste Management System

Mr. Stephen Lee, the Managing Director of Allied (International) Process Engineering Ltd., Hong Kong, and Dr David Hui, Assistant Professor at HKUST,

gave an interesting presentation on the topic of a total waste management system.

The objective of the proposed project is to develop a zero waste (zero emission) landfill site by proper integrating solid wastes sorting and recycling, wastewater treatment, biodegradable wastes digestion, waste to energy, landfill gas utilization and flower farming on a landfill site. The integration fully utilizes the values of land, wastes and energy available on landfill sites reduces significantly the amount of MSW for landfill, creates incomes by exporting recyclable materials, fuel gas, electricity, soil conditioners, flowers, etc., making it an ideal solution for managing MSW.

The Waste Sorting Centre can generate Sorted Wastes for supporting downstream Recycle Industries establishment, the Waste-To-Energy Centre can generate sufficient utilities for supporting the operation of the downstream recycle processes. The Recycle Park or Waste-To-Product Center will apply latest environmental technologies to convert the Sorted Wastes into useful Products. As long as the utilities cost and land cost is low, the recycle industries can be self-sustainable and turn wastes into physical and useful products. Therefore, the integration of wastes, energy and land on the landfill site is the most important element in supporting the sustainable recycle industries in Hong Kong.

A large scale Environmental Technology Demonstration, Education and Research Center will be located in the Rose Garden to bring the community and students to visualize and practically involved in the waste-to-energy or waste-to-product technology processes.

The concept of the integrated process on landfill sites is novel and has never been implemented anywhere in the world. To obtain useful data to design and optimizing the integrated process, the proposed project will first develop a material and energy balance model for MSW sorting, wastewater treatment, waste to energy processes, etc. By providing low cost utilities and land, the establishment of the Recycle Park can be established and sustained.

The ultimate targets and benchmarking of this Sustainable Environmental Rose Garden Scheme are:

1. To create 1400 direct and indirect LONG-TERM sustainable job opportunities in Hong Kong;
2. To be one of the biggest Recycle Park in Hong Kong (turn 1500 tons/day of wastes into products);
3. To consume all the landfill gas generating from the landfill site into energy sources, and reduce greenhouse gas emission;
4. To be one of the biggest environmental technology demonstration and education center in Asia;
5. To be one of the hot tourist spot in Hong Kong and supporting the tourism industry;
6. To demonstrate visually Hong Kong is the leading Environmental City in the world; and
7. To partially resolve the emerging MSW handling problem in Hong Kong.

Geographic Information Systems – Engineering and Waste Management Applications

Mike Bains of consultants Scott Wilson gave a talk on the application of GIS to a number of waste management studies carried out recently for Hong Kong Government. Mike's talk focused on three particular applications of GIS, namely;

- Constraints mapping;
- Spatial analysis; and
- Data visualisation.

Constraints mapping is a means of selecting suitable sites for a waste management facility by excluding those areas which are “constrained” by the presence of other land-uses. A series of separate overlays were developed for the whole of Hong Kong which covered a wide array of different constraints. These constraints included ecological factors (such as rare species) and the presence of existing infrastructure (such as roads, bridges and urban areas). When all of the constraints maps are overlaid, the output is a map which allows the “unconstrained” areas to be identified. In the case of a densely developed and populated area such as Hong Kong, these unconstrained areas are very small. One of the advantages of using GIS rather than paper maps for this process is the ease with which certain categories of constraint can be turned on or off, allowing many “what if?” scenarios to be examined.

GIS offers a number of spatial analysis tools which can also be used as part of site selection. By using a Digital Terrain Model, factors such as elevation and slope can be plotted and used for selecting suitable areas (e.g. flat level areas). Buffer zones can also be set around point or linear features, and examples of all of these techniques were shown.

Finally, Mike illustrated the visualisation tools that form part of many GIS packages and which can be used to present data in a visually appealing and easy-to-understand format. These include the incorporation of aerial photos with GIS data sets, allowing a realistic 3-D visualisation to be produced which can include any of the datasets available on the GIS.

Reporters Award 2002-2003

Congratulations to Mandy Ip and H.L.H Tse, winners of the Reporters Award 2002-2003 for their technical write-ups on “Evaluation of Waste Management Options: A New, Goal-Oriented Approach Emphasizing Long-Term Aspects of Landfilling” and “Total Recycling: Future-Oriented Resource Management”, respectively.

Each of the winners will receive a free membership to the HKWMA (for 2003-2004 session) which will be presented to them at the upcoming Cocktail.

Upcoming Events

The Association's Annual Social Cocktail will be held on 10 July 2003 (Thur) at 6:45

pm at the Garden Lounge, 4/F, HK Club. So mark your calendars and be sure to come and enjoy the fun, food and company (and to celebrate Hong Kong being SARS-free)! The HKWMA is currently producing a new brochure, which will be launched at the HKWMA's Annual Social Cocktail. Pick one up and pass it along to a friend/a colleague and introduce them to our Association.

Photos from HKWMA's Social Cocktail 2002



From LtoR: Mr. & Mrs. Daniel Cheng (Dunwell), Dr. Ellen Chan (EPD), Mr Edwin Lau (Friends of Earth), Mr. James Tam (Swire SITA), Mr Frank Wan (ERM), Mr Lo Yiu Chuen (On Kee) and Dr Claudia Xu (HKUST).

From LtoR: Mr. Mike Stokoe (EPD), Mr. James Tam (Swire SITA), Mr. Rob Law (Director of EPD), Mr. Daniel Cheng (Dunwell) and Mr Maurice Lee (Chairman of HKIE Env Division).

HKWMA Technical Seminars

1. Date: June 23 2003
Title: Towards Zero Waste – A Sustainable Construction Industry in Hong Kong
Speaker: Mr. Alexi Bhanja of Scott Wilson
Venue: HKIE Seminar Room
Remarks: Joint function with Environmental Division, HKIE
2. Date: September 24 2003
Title: Decommissioning of the Former Cheoy Lee Shipyard at Penny's Bay
Speaker: Wilson WS Pang of CED and Matthew MC Ko of Maunsell Consultants Asia Ltd.
Venue: HKIE Seminar Room
Remarks: Joint function with Environmental Division, HKIE

For more information on upcoming technical seminars please see the HKWMA website or contact the Technical Seminar organizer at seminar-organiser@hongkongwma.org.hk

HKWMA Technical Visits

In 2005, the Hong Kong Disneyland Theme Park is set to open. Now you can get a first hand look at the works being carried out at Penny's Bay on Lantau Island, the site of the future theme park. A technical seminar and visit have been jointly arranged with the HKIE and is scheduled for 24 September 2003 (technical seminar) and 27 September 2003 (technical visit). **Keep an eye out for this upcoming event!!** For more information please see the HKWMA website

(www.hongkongwma.org.hk) or contact the Technical Visit organizer at visit@hongkongwma.org.hk

International Waste Management Events

The following are events organized by other organizations and associations around the world and are provided for members' reference only. Publishing this information does not constitute an endorsement of these events by the HKWMA.

1. Date: June 16-20 2003
Event: Landfill Symposium and Solid Waste Managers Conference,
(sponsored by the Solid Waste Association of North America, Atlantic City,
N.J.)
Enquiries: (800) 476-9262
Website: www.swana.org/symposia.asp
2. Date: June 23-25
Event: Paper Recycling Conference and Trade Show, Chicago.
Enquiries: (216) 961-4130
Website: www.qiemedia.com
3. Date: Sept. 9-11
Event: Advances in Waste Management and Recycling Conference, Dundee,
Scotland.
Enquiries: Contact Moray Newlands 44 (0) 1382-344357 or fax 44 (0) 1382-
345524
4. Date: Sept. 30-Oct. 3 2003
Event: International Conference on Remediation of Contaminated Sediments,
Venice, Italy.
Enquiries: Contact Marco Pellei at sedimentscon@battelle.org or fax 41-22-
827-2094
5. Date: 6 to 10 October 2003
Event: Sardinia 2003: 9th International Waste Management and Landfill
Symposium
Enquiries: info@sardiniasymposium.it
Website: <http://www.sardiniasymposium.it/>
Contact: Prof. Raffaello Cossu
6. Date: Oct. 14-16, 2003
Event: Wastecon 2003, St. Louis.
Enquiries: www.swana.org
Website: www.swana.org
7. Date: 3-5 November 2003
Event: International Conference on Pollution in the Metropolitan and Urban
Environment (POLMET 2003)
Enquiries: 2895-4446 or conf@hkie.org.hk
Website: <http://www.hkie.org.hk/POLMET2003>

8. Date: 9-13 November 2003
Event: ISWA Congress 2003 – Sustainability in a New World
Enquiries: +61 3 9877 9960 (tel) +61 3 9877 5534 (fax)
Website: <http://www.iswa2003.net>

Correction to Winter 2002 HKWMA Newsletter

The representative speaking on behalf of Swire SITA at the opening of the North West New Territories Refuse Transfer Station located near Yuen Long on 11 July 2002 was Mr. Mike Campbell and not Mr. Michael O'Keefe as was incorrectly stated in the Winter 2002 HKWMA Newsletter.