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Recovery and Recycling of Expanded Polystyrene (EPS) Products in Hong Kong

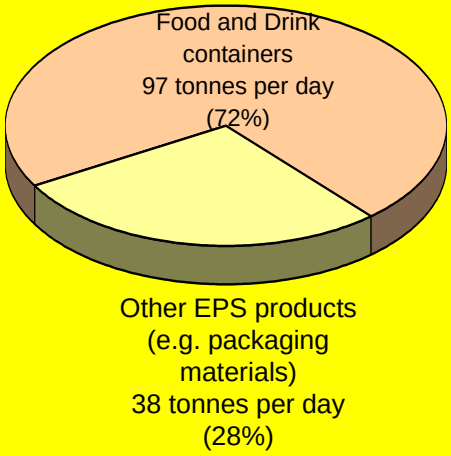
5.1 Introduction

Polystyrene (PS) and Expanded Polystyrene (EPS, commonly known as plastic foam) are made from non-renewable petroleum based chemicals. PS is light, hygienic and commonly used to pack food, drinks, fragile and deformable goods. Usually, EPS products are 98% air and only 2% PS. On account of the ban on the use of ozone-depleting chlorofluorocarbons (CFCs), hydrocarbon compounds (e.g. pentane, butane) and carbon dioxide are commonly used as blowing agents nowadays.

5.2 Situation in 2006

Some 135 tonnes of EPS waste were disposed of at our landfills every day, of which about 97 tonnes were EPS food and drink containers (Figure 1).

Figure 1
Breakdown of EPS waste disposal in Hong Kong in 2006



5.3 Waste Management Options for EPS *(adopted from International EPS Alliance[1])*

There are four main options for reducing EPS packaging waste, known as the 4 R's:

a) Reduce - refers to the reduction of natural resources used. Single-use disposable product should be avoided. EPS usage can be reduced by optimising packaging design, thus reducing environmental burden and cost.

b) Re-use - EPS packaging can be re-used as multi-trip packaging, e.g. for the internal transport of partially-assembled goods. Another simple re-use of the packaging is to grind it and use it as soil conditioner to improve drainage and aeration.

c) Recycle - the reprocessing of used EPS packaging to make a new material such as hardwood replacement for making garden furniture, slate replacement for roofing tiles and new plastic items such as coat hangers, CD and video cases.

Note [1] - International EPS Alliance is the home page of the Expanded Polystyrene (EPS) Packaging International Task Force, an industry federation based in London

Flowchart of EPS Recycling

Cleaned EPS Packaging Wastes

or

Compression

Melting

Pelletize to form recycled PS material

New Products

d) Recover - EPS has a very high calorific value, higher than that of coal, and can be safely burnt in energy recovery units, or incinerators with proper pollution control equipment, without giving off toxic or environmentally damaging substances.

In end 2002, we commissioned Friends of the Earth (HK) Charity Ltd to investigate the feasibility of EPS recovery for recycling purpose in Hong Kong through a "Feasibility Study of Packaging EPS Recycling". The study investigated the local EPS recovery pattern and market outlets and made recommendations on the collection and recovery of EPS packaging waste in Hong Kong..

5.4 Alternatives to EPS Products

There are concerns on the potential damage to the environment through the use of EPS.

When judging whether a product is "environmentally friendly" or not, we need to consider all stages of its processes, starting with the raw materials, manufacturing, usage and right to the disposal end. For example, it may be a common misconception that a paper cup is more "environmentally friendly" than a plastic foam cup. In fact, the making of a plastic foam cup will use 12 times less steam and 36 times less electricity than one made of paper.

On the other hand, plastic foam, like any type of plastic waste, is not easily degradable and remains in the landfill for many years. Like any other disposable product or packaging material, the proliferated use of plastic foam food containers will add to the burden on disposal and the landfills.

In the market, there are products made of pulp or plant fibres which are claimed to be able to replace EPS in packaging and tableware (such as lunch boxes, cups and plates) and are more environmentally acceptable.

In December 2000, the Environmental Protection Department (EPD) issued a "Testing Guideline on the Degradability and Food Safety of Containers and Bags" taking into account of local conditions. A voluntary Registration Scheme has also been developed for those products meeting the criteria stipulated in the Guideline. Details of the Testing Guideline and the Registration Scheme are available under the "Waste" Section of the EPD website: www.epd.gov.hk

The Government will keep in view of development of new products and will consider their feasibility as alternatives.

5.5 Possible Ways to Reduce EPS Waste

We believe the only way to achieve a sustainable waste reduction strategy for Hong Kong is to change the community's wasteful habits. At the same time, we would promote the use of more environmentally friendly replacements such as reusable tableware. Whilst the use of degradable disposable food containers may be more acceptable than that of plastic foam food containers, the priority is still to avoid and reduce the use of disposable products in the first place. We should reduce the amount of EPS waste by the following ways:

For Schools

- Choose to use reusable tableware (such as stainless steel or plastic) for school lunch to replace disposable plastic foam lunch boxes
- Encourage students to bring their own lunch (in reusable tableware)

For Food Suppliers and Restaurants

- Avoid the use of disposable plastic foam containers for in-house consumption
- Supply reusable tableware instead of plastic foam lunch boxes to schools
- Use environmentally friendly food/drink containers and tableware as appropriate replacements for plastic foam products
- If use of disposable containers cannot be avoided, consider using degradable containers
- Arrange with recyclers to collect the used disposable containers or cutlery for recycling.
- Consider providing a discount to customers who bring their own containers to buy take-away food/drink

For Individuals

- Avoid using plastic foam food/drink containers or other disposable products at home or for parties
- Avoid using plastic foam food/drink containers when you dine out in a restaurant
- Bring your own lunch
- Try not to buy products with excessive EPS packaging
- Recycle EPS packaging through the programme on Source Separation of Domestic Waste
- Reuse EPS containers, e.g. for potting plant