Researched, written and co-ordinated by Carole Knight ● 021 855 2982 ● www.carole knight.com

Taking action to reduce pollution and manage waste

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Pending National Waste Management Bill

In South Africa, the pending National Waste Management Bill cites penalties including fines of up to R10 million and/or imprisonment for a period of 10 years. Intended to "reform the law regulating waste management in order to protect health and the environment", the pending Waste Bill will no doubt see an increase in reported convictions of environmental criminals, targeting businesses and other polluters that engage in activities such as illegal dumping and land contamination.

As the new waste management legislation dictates that waste generation at all phases of a product's life cycle, including manufacturing, be examined, an integrated waste management approach from the point of generation to final disposal will be very important in order to reach the objectives of the pending legislation.

With a national target of reducing the amount of waste products going to landfills by 70% by 2022, a further positive outcome to the successful implementation of the bill could be the value attached to waste streams that are recyclable and that have reuse options. The reason for this is that recyclables could be handled as product with value and not as waste.

This in turn would help to achieve the objective of the new legislation, which is to minimise the consumption of natural resources, with the added bonus of creating recycling income opportunities for small business entrepreneurs.

Elegant solutions to managing waste

Lifestyle choices for the 21st century are increasingly about helping to make life better, easier, faster. However, in keeping with the changing values of the Environmental Era, gains in efficiency and expediency are having to be carefully weighed against issues relating to environmental degradation and non-renewable resources consumption.

One solution to the modern-day conundrum of convenience versus waste generation is recycling, which helps to reduce the volume of waste sent to landfills, the extraction of raw materials, pollution and energy consumption, while helping to keep cities clean and creating job opportunities.

In the case of plastics, considerable headway is being made in terms of recycling, as more than 172 000 tons of plastics are recycled in South Africa every year by the 160 plastics recycling companies that have proliferated in this country – with the recycled polymer being made into an assortment of products such as dustbins, irrigation pipes, flower pots, stadium seats, buckets and crates, carpets and outdoor furniture, all designed to enhance the modern lifestyle.

In many developed and developing countries bottled water as a lifestyle choice is viewed as a healthier, more convenient and more stylish alternative to tap water. Consequently, global consumption of bottled water increased by 57% from 1999 to 2004, totalling 154 billion litres in 2004. This required more than 2.7 million tons of plastic to produce the plastic bottles that the bottled water was contained in.

In terms of the "big five" of polymers used to make beverage bottles, polyethylene terephthalate or PET, which is derived from crude oil, is the most popular material.

Injection-moulded PET bottles have properties of high hardness, and strength. They are resistant to stress cracking, weathering and hot air, being able to withstand temperatures ranging from minus 40ºC to 100ºC. They are also resistant to water, acids, alkalis, salt solutions, alcohol, ethers, oils and fats.

While these properties make PET bottles extremely useful to the beverages industry and consumers, they also make them difficult to dispose of and long-lived in landfills. They are, however, fully recyclable, as the polymer can be recovered for further use as fibre used to fill duvets and pillows, geotextiles, Isotherm roof insulation (a safe alternative to fibreglass-type insulations) and plastiwood products such as disposable plates and cups, yoghurt containers, take-away food tubs, fruit trays and egg cartons, are a boon to the food service industry because they offer properties of packaging customisation, effective insulation, sturdiness, hygiene and safer in-store handling.

Although considered unsuitable for discarding in a landfill, from an environmental perspective, polystyrene, which is composed of 5% expanded polystyrene foam packaging and the rest air, has a number of benefits. It can reduce the density of packaging by a factor of 35, which allows for significant savings on resources and transport fuel. Less energy and resources are used in the manufacturing process than comparable paper or coated paperboard products. And it burns cleanly supplying greater heat during combustion in an incinerator than wood or paper, which can compensate for fuel usage.

Polystyrene can be recycled up to 20 times without any damage to its physical properties, with post-consumer recycled polystyrene becoming "green building" construction products, seedling trays, picture frames, curtain rods, finials and holdbacks, coat hangers, poles, decking and outdoor furniture.

Winner of the prestigious Mail & Guardian Greening the Future Awards' category "Companies and organisations with innovative environmental strategies that improve business performance", EnviroServ Polymer Solutions's green pallets are made from recycled Tetra Pak cartons, the containers in which long-life milk, juice and similar products are bought, and High Density Polyethylene (HDPE).

Although Tetra Pak cartons are the primary raw material for green pallets, they can also be converted into a number of other recycled products, including roof tiles and board which can be used for applications such as chairs and desks.

This is achieved through a process known as hydropulping, whereby packaging material is put into water and delaminated under high friction by hydraulic forces, with the remaining polyethylene and aluminium foil being removed.

Green pallets offer many commercial and environmental benefits over comparable wood pallets. Although wood has long been the traditional material for pallet manufacture in South Africa it is becoming a scarcer resource.

Also with a 40% price increase in the past 18 months, wood is becoming more expensive, which sometimes means that in order to offset price hikes cheaper cuts of wood are used which decreases the structural integrity of the pallets.

Green pallets, on the other hand, are extremely durable. They are easier to clean than wood alternatives. The composite material is more UV-resistant and doesn't harbour microbes and it is derived from plentiful waste-stream materials.

Recycling, indeed, offers elegant solutions to the management of waste.

PHOTOGRAPH COURTESY OF PLASTICS FEDERATION OF SOUTH AFRICA

FANTASTIC: Pictured here are the winners of the Enviromark Fantastic Plastics Competition 2008.

PHOTOGRAPHS COURTESY OF THE CITY OF CAPE TOWN

HAVING FUN: WasteWise programmes – community members (left) and learners (right) participate in skills development workshops using waste materials.

On our doorstep

South Africa's "throw-away" culture generates enough waste in one year to fill 760 000 buses. If parked bumper to bumper these buses would cover 70 kilometres – the approximate distance from Goodwood to Rawsonville or Welkom to Kroonstad!

Like most cities in the country, Cape Town has a growing waste problem. However it's not just about the litter we see being blown around our streets by the southeaster.

The City of Cape Town's (the City's) research shows that a total of 7 100 tons of waste is generated daily.

This translates into four soccer fields, one metre deep, of waste being generated every single day – an alarming figure equating to roughly 2.2kg of waste being generated each day by every resident in the Mother City.

In metropolitan Cape Town, waste generation rose by 7% over the past year, which is a figure considerably higher than the population growth rate.

Factoring in expected growth, the 2.5 million tons of waste currently being produced each year will have risen to 4 million tons by 2012. This could soon be an unmanageable amount of waste as the city is quickly running out of landfill space to dump it.

Landfills are designated waste disposal sites where most of the waste produced ends up. Managed by the City there are only three remaining landfill sites in the Cape, namely Vissershok, Bellville South and Coastal Park, where waste is delivered daily.

The average composition of a landfill in South Africa is made up of 9.7% glass, 37.1% paper and paperboard, 6.9% general plastics, 9.6% metals, and 36.7% other assorted materials.

Once at the landfill waste is spread, compacted and covered with soil, sand and builders' rubble. It is then left to slowly decompose, a process that can take a very long time, especially with the "Big Five" of waste materials, plastics, cans, paper, glass and tyres, all being mixed together.

A case in point is a New York landfill that was excavated a few years ago. This landfill yielded newspapers from 100 years ago that were perfectly readable!

Not only is Cape Town running out of active landfills, but space constraints mean that finding new geologically suitable sites is very challenging. This, coupled with the fact that the volume of waste going to Cape Town's landfills is growing at a far higher rate than our population growth, means that the city could be faced with the choice of either having to transport waste greater distances, which will lead to far higher service tariffs for households and businesses, or minimising a greater volume of waste by reducing, reusing and recycling.

It is estimated that 60% of all household waste can be recycled, however, currently only 14% of the waste being generated is recycled.

The City would like to significantly improve this figure while at the same time focusing on waste reduction and the reuse of waste where possible.

Taking a proactive stance

Taking a proactive stance on waste management, the city's Solid Waste Management Department has put a comprehensive plan in place to reduce waste output, making Cape Town the first city in Africa to adopt an Integrated Waste Management Plan. This plan, which was implemented in 2006, focuses on waste minimisation and recycling with a dedicated team of experts within the department having been established to drive the initiative.

With a medium-term goal of reducing waste dumped at landfills by 25% by 2012, the City has established 23 community waste drop-off facilities at key points across Cape Town.

Last year, the "Think Twice" residential waste separation campaign was launched. The launch saw Think Twice being piloted in Hout Bay, Glencairn, Fish Hoek and Kommetjie (southern suburbs), Strand north, Gordon's Bay, north-eastern Somerset West and north-western Somerset West (Helderberg), as well as in Delft, Mfuleni, Brown's Farm, Philippi and Weltevreden. The Atlantic area, which included Melkbosstrand, Bloubergstrand, Parklands and Pinelands, also joined. And a few months later Sea Point, Green Point, Mouille Point and Three Anchor Bay were added as the latest additions to the Think Twice Project.

A campaign has been launched to help the local manufacturing sector streamline their production processes from a waste production perspective by providing free-of-charge environmental audits to local manufacturers.

Solid Waste's "Waste Wise" initiative is supporting these interventions through targeted marketing and education campaigns, incorporating workshops, corporate road shows and shopping mall promotions designed to raise awareness of the scale of the problem among Cape Town's residents, while providing useful information on how each Capetonian can help to reduce the City's waste output.

In order to educate learners about the importance of waste reduction, separation, and recycling, Waste Wise is conducting an extensive schools outreach programme.

The City's Solid Waste Management Department has relaunched the Integrated Waste Exchange (IWEX), an innovative online waste minimisation platform that enables participating city businesses and other stakeholders to trade, sell or donate materials that would otherwise have been discarded.

By registering on IWEX, participants are able to post waste materials that are either available or wanted, browse the existing listings of available and wanted waste, and make direct contact with a waste supplier or customer. IWEX presents significant advantages for participating businesses such as turning fixed costs for waste storage, transportation and disposal into savings. Businesses that are interested in registering or finding out more about IWEX should visit the website www.capetown.gov.za/iwex

In March this year, the City also initiated the Builders Rubble Crushing Facility project at three facilities, namely Coastal Park, Bellville South and Gordon's Bay landfill sites. At these facilities, clean builder's rubble from both contractors and residents (up to 1.3 ton) is accepted and crushed for recycling purposes.

These initiatives have been put into action against the backdrop of new legislation designed to encourage local residents and businesses to adopt more stringent waste minimisation practices.

Paradigm shift

If we are to slow population growth to numbers that will avoid tipping the earth and, with it humanity, into the darkness of an overpopulated abyss; if we are to use what the earth is able to provide in terms of resources, more efficiently; if we are to distribute these resources in a fairer way so that everyone in the family of Man has their fair share, without some having too much and others having too little; if we are to reduce overall consumption of resources to levels that the earth's carrying capacity can sustain now and into the future; if we are to prevent waste generated by a throw-away mentality from choking us out of existence – we need to heed the enormous paradigm shift that is taking place around the world.

For although eminent thought leaders such as James Lovelock, the originator of the Gaia hypothesis, believe the world to be in "sustainable retreat", sustainable development is still the most hopeful construct to take us further into the 21st century. If we don't act now, our children will inherit a very different world to the one we have enjoyed.

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