

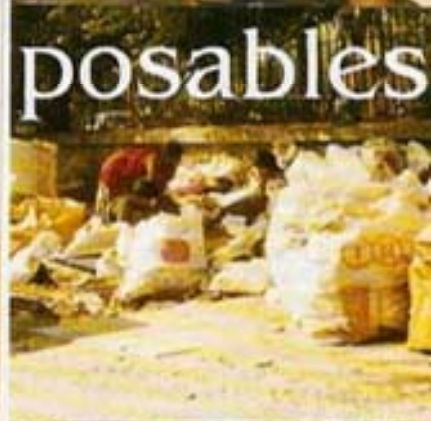


Eco-Echoes

ICPE NEWSLETTER

Quarterly Publication of Indian Centre for Plastics in the Environment

Vol 3, Oct./Dec. 2002, No. 4





Mumbai - December, 14 (Noon) and 13 (1830 hrs) 2002

The slogan well read, however, the habits of local population do not change.



Eco-Echoes

ICPE NEWSLETTER



Disposables

Vol. 3 Oct/Dec. 2002 No. 4

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Cover: Disposables are integral part of our daily life

(Material assistance derived from Mobile phone dealers, The Hindu Business Line; The Financial Express, The Economic Times, Vijay Merchant, and Mihir Banerji is gratefully acknowledged)

Readers are invited to send their contributions in the form of short notes/news items, new product development, case studies relating to Plastics and the environment, recycling technology, waste management, etc. for Publication in the Newsletter.

All correspondence regarding ICPE Newsletter should be addressed to the Editor Eco-Echoes ICPE, Vijaya Building, 10th Floor, 17, Barakhamba Road, New Delhi-110 001, INDIA. Material published in the Newsletter may be freely reproduced, but its due acknowledgement will be appreciated.

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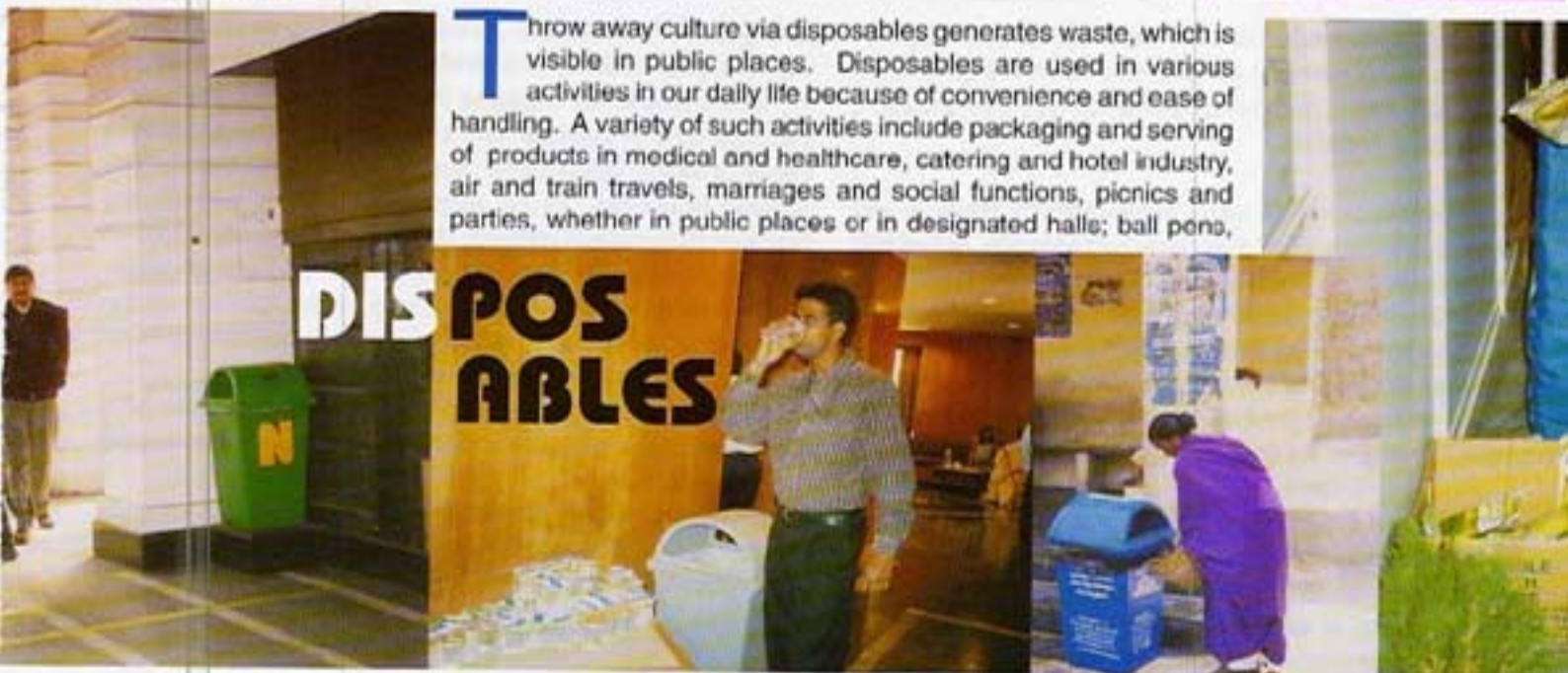
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Throw away culture via disposables generates waste, which is visible in public places. Disposables are used in various activities in our daily life because of convenience and ease of handling. A variety of such activities include packaging and serving of products in medical and healthcare, catering and hotel industry, air and train travels, marriages and social functions, picnics and parties, whether in public places or in designated halls; ball pons,

DISPOSABLES



shaving blades etc. The disposables, the short time use, when they form part of waste stream, that is, urban solid waste, are appropriately collected by the rag pickers and segregated into recyclables and biodegradables. But that concerns the common man and city authorities alike when these disposables are found littered in public places and do not become the responsibility of anyone for organized collection and disposal.

In respect of Municipal Solid Waste, the Ministry of Environment and Forests have formulated **Municipal Solid Waste (Management and Handling) Rules 2000**. And it is obligatory on the part of all the local authorities in the country to fulfill the requirements laid down in these rules. To achieve these objectives, Municipal Authorities all over India have geared their activities to organize and manage Municipal Solid Waste and work out the management and disposal options as per the composition. States like Delhi, Himachal Pradesh, Haryana, Maharashtra, Tamil Nadu and West Bengal have formulated plans of action to fulfill the requirements of the rules.

Disposables of various materials are seen in the waste stream. These include plastics, paper, aluminum, glass and the natural materials like leaves, coconut shells besides waste food. The visibility of the

disposables is more in places of tourist and religious interests.

Plastics as group of materials are extensively used in disposables. These include, polystyrene, Polypropylene, PVC, and polyethylene. The fields of applications are varied. In the catering industry, plastics disposables like cups, plates, tumblers, spoons, drinking straws, are much in demand as against those based on conventional materials like paper, cardboard and natural leaves. There have been debates and opposition to continued use of plastics disposables, even suggesting their 'Ban' in different countries. Because of their hygienic use and convenience, there are no alternatives to plastics. However, after use, their proper disposal through indented 'litterbins' has been considered an acceptable environmental practice of management.

There have been good practices of keeping 'litterbins' in public places and fast-food outlets like Nirulas, Haldirams, McDonalds, Pizza Huts/ Corners/Dominos including now at Railway stations, Air Ports, public places/parks; but their sincere use coupled with the habits of the local public require concerted efforts on their part to manage the disposables and avoid littering around.

The recyclable disposables like that of plastics, paper, aluminum Cardboard and glass are value added products, and very actively collected by the rag pickers. Still there are quite a number

DIAPER RECYCLING

A DUTCH city this week embarks on a dirty job in a bid to clean up the environment: recycling the disposable nappies of its youngest citizens. Parents in Arnhem have started dropping nappies sealed in plastic bags into special bins outside two child care facilities and a local recycling firm has been hired to extract wood pulp and plastic from the waste, the city Council said.

Knowaste Bv, the subsidiary of a Canadian firm, plans to collect Arnhem's annual 200,000 kilos of nappies from 40 bins in the city. "We hope that within two years it will be as normal to separate your diapers as glass and cans. It's all automated and computerized," Knowaste Bv's sales manager, Niels Williams, said. "The process is more environmentally friendly than landfill or incineration. By recycling the waste we save water, energy and wood."

(Source : The Hindu Business Line, Thursday, August 16, 2001)

of disposables in the waste stream, which are either unhygienic to collect or uneconomic to recycle, remain on the ground. In this category fall a number of personal hygiene products including Baby nappies.

The disposable products used extensively in medical and healthcare field, are invariably based on plastics. According to the **Bio-medical Waste (Management and Handling) Rules 1998** (Ministry of Environment and Forests) these disposables form medical waste, which are not required to be recycled but disposed of through autoclaving and incineration. A number of private agencies have come up in India, which take responsibilities for disposal of bio-medical waste.

Disposables are essential part in our life style. The only worry is when they form part of the waste whether through catering establishments, social functions and parties or picnic at public places and parks or even tourist and religious places, these are to be managed by organized collection through **litterbins**.

In India, unfortunately our garbage culture is, as we know of, requires reforms at various levels. As already mentioned, the city authorities have engaged themselves in bringing about improvements in management and disposal of municipal solid waste of which disposables form a major constituent. The concept of two-bin culture, segregation of waste at source, provision of municipal garbage dumps appropriately designed and managed and technological options of disposals, besides creating public awareness are some of the features of the programmes being launched by various local authorities in co-operation with the NGOs in the country.

By rough estimate, recyclable disposables, constitute 30% of the total municipal solid waste (100,000 tonnes) generated every day in India.

The disposables continue to be an integral part of our daily life, their style of disposing and management are important and call for full public participation in cooperation with the city authorities.

... O. P. FATRA

ICPE GOVERNING COUNCIL MEETS

Mumbai : December 14, 2002



ICPE JOINS ENVIS

- g) To establish linkages with information users, carriers and providers from among government, academia, business and Non Governmental Organizations including that with ENVIS.



Dr. Indrani Chandrasekharan, Director, MoEF seen signing and exchanging MoU with Dr. AN Bhat DG, ICPE

Government of India, Ministry of Environment & Forests has launched Environment Information System (ENVIS) Node in Universities/Registered Societies/Private Bodies. The ENVIS - Capacity Enhancement Programme has identified a focal point (Node) to collect and disseminate information relating to Environment. The Ministry has identified **INDIAN CENTRE FOR PLASTICS IN THE ENVIRONMENT (ICPE)** for capacity enhancement programme relating to **"Management of Plastics, Polymer Wastes and Bio polymers, Impact of Plastic on Eco - system"**. ICPE as a Node will furnish information collected by it to ENVIS - Capacity Enhancement Programme as and when required or to such persons or bodies, namely, Central and State Governments and Organizations, scientific institutions and research scientists (users), etc. ICPE will work towards fulfillment of objectives of ENVIS - Capacity Enhancement Programme which are as follows :

- a) Creation of Website on Management of Plastics, Polymer Wastes and Bio polymers, Impact of Plastic on Eco - system with regional language interface
- b) Monthly compilation of News Items on Management of Plastics, Polymer Wastes and Bio polymers, Impact of Plastic on Eco - system
- c) Identification of information/data gaps in the specified subject areas and action taken to fill these gaps.
- d) Database creation on Management of Plastics, Polymer Wastes and Bio polymers, Impact of Plastic on Eco - system to be put on website.
- e) Contribution of news items for ENVIS newsletter on monthly basis
- f) To establish and operate a clearinghouse to answer and channel queries related to the allocated subject.

A Memorandum of Understanding for setting up of the ENVIS was signed on 13th November, 2002 between Ministry of Environment and Forests and ICPE.



MoEF and ICPE Envis Team



POLY BAGS - A MISSION IMPOSSIBLE



(L to R) Dr. Indrani Chandrasekharan, O. P. Ratra & Ms. Shyamala K Mani



The Participants

Doordarshan Bharti in association with Delhi Public School Society telecast one hour programme entitled "Poly Bags, A Mission Impossible" on 18th October 2002. The participants in the programme were students and teachers drawn from three schools. The panelists included, Dr.(Ms) Indrani Chandrasekharan, Ministry of Environment and Forests (MoEF), Ms. Shyamala K. Mani, Coordinator, Centre for Environment Education (CEE) and O.P. Ratra from Indian Centre for Plastics in the Environment (ICPE). The programme was well received all over India and voices raised by the students confirmed that Poly Bags have no alternatives and they are useful in our daily life.....



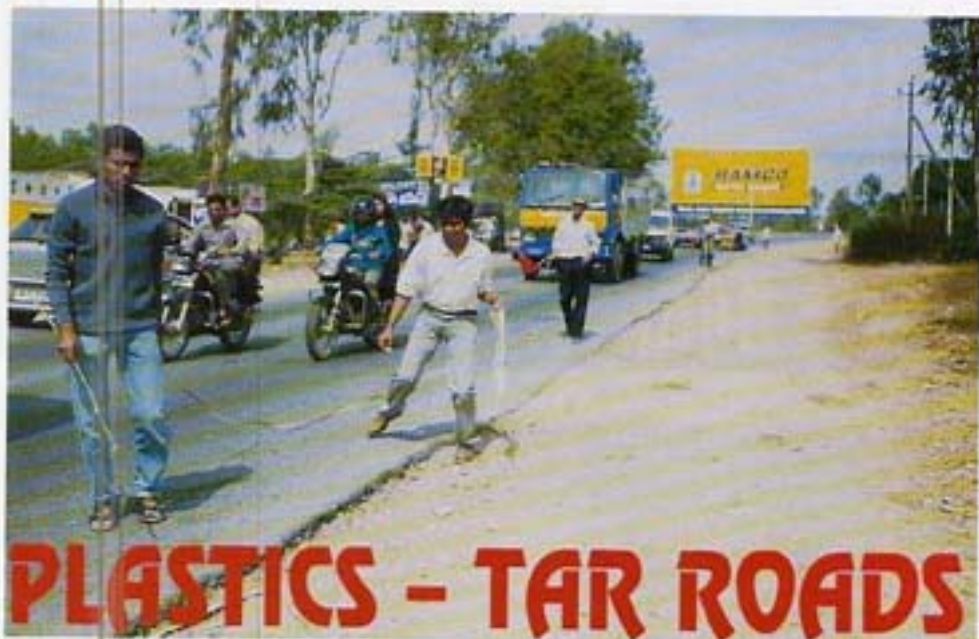
“ It is very cheap for use it as a container for food items also. Poly Bags have become a necessity of life; they are durable, cheap and so handy. They are very airtight and water proof. So it is better than any other packaging materials. Plastics are non-biodegradable. In some advanced countries are using poly bags which are biodegradable and photodegradable. Why in India that type of technology not developing? ”

Poly Bags हमारे जीवन में एक बहुत जरूरी शिखर बन चुके हैं। उनके बिना जीवन गुजरना बहुत मुश्किल है। आज बहुत लोग Poly Bags के खान पर जूट बैग या कपड़े को खेले की जगह करते हैं क्या हम ऐसा भी कह सकते हैं कि प्लास्टिक घरों में क्यों रह रहे हैं चाहे तो हम डोपट्टी में भी रह सकते हैं। Poly Bags जूट या कपड़े को खेले को मुश्किले वाली जगह सुविधाजनक हैं।

एक शिखर अगर अपनी खेरी को जगह बनाने को लिए चीज जदि रहत से ले जा रहा है तो या Poly Bags में ही ले जा सकता है क्योंकि Poly Bags ऐसी चीज है जो आसानी से मिल सकता है और बहुत सस्ती है किन्ते जदि जगह भी आसानी से खरीद सकते हैं।

आज के समाज में हर कोई reputation चाहता है क्या कोई चाही या पारिवी में जूट या कपड़े को खेले खेले को ले जाया परंद करेगा।

Poly Bags में किसी भी चीज को आसानी से carry किया जा सकता है। अगर कोई Poly Bag में खाड़ी जदि ले जा रहा है तो उसमें खरी का कोई अगर नहीं पढ़ता। ”



PLASTICS - TAR ROADS

SALEM TOWN SHOWS THE WAY TO HANDLE PLASTIC WASTE

Salem, an industrial town in Tamil Nadu, is the first to lay a plastic - tar road in the country. The city Mayor R. Suresh Kumar announced recently that the plastic-tar technology would be adopted widely by the Corporation to mitigate the menace of plastic wastes.

Speaking at the inaugural function of the laying of a 350-metre road on experimental basis using plastic tar technology here, the Mayor said the problem of plastic wastes management posed a major challenge to the City Managers.

Hence the Corporation had decided to adopt the polymer-tar technology developed by Dr. R. Vasudevan, Chemistry professor, Thyagarajar College of Engineering, Madurai. The technology is such that the plastic waste management finds a ready solution. The bitumen and gravel mix used for laying roads is combined with flakes or granules made from domestic plastic wastes like carry bags, teacups and variety of domestic plastics.

Public can sell their domestic plastic wastes instead of discarding them into the dustbin. The Salem Manufacturers Association has shown keen interest in recycling domestic wastes and the Salem

Exenora club has already taken steps to promote the concept, the mayor said.

Speaking about his technology, Dr. R. Vasudevan said the bitumen mixed with plastic flakes made from domestic wastes displays better hardness, better resistance to water penetration and hence lasts longer. Domestic wastes falling into categories such as polyethylene, polypropylene and polystyrene can be converted into flakes or granules and be mixed with the aggregate. Alternatively the plastic can be mixed with heated tar and later mixed with the gravel. Polyethylene can be used up to 5 per cent and polystyrene 20 per cent and so on, the professor said.

This project is a combined effort of the Salem Municipal Corporation, Corporators, the Exenora Club, an NGO and the plastic manufacturers. The Kovilpatti Municipality, near Madurai, too had adopted the technology and expressed satisfaction.

There is a lesson for Municipal Corporations of all the major cities like Chennai, Bangalore, Delhi and Mumbai that are generating thousands of tonnes of garbage every day.

BANGALORE BASED FIRM PIONEERS MOVE

NEW TECH TO USE WASTE PLASTIC FOR ROAD CONSTRUCTION.....

A new technology developed by a team of entrepreneurs to use waste plastic for construction of roads has caught the Government's attention, which is contemplating to utilize this innovative method extensively across the State. Bangalore-based K. K. Polyflex, a firm manufacturing plastic goods, came up with the technology, which also addressed the problem of disposal of plastic waste in an environmental friendly manner. The Centre for Transportation Engineering and Civil department of Bangalore University carried out tests about its strength and durability.

The newly laid road using the new technology in Ulial near Bangalore was inspected by Chief Minister S.M. Krishna today.

In his address, Chief Minister S.M. Krishna said that the Government would consider setting up small plants for mixing waste plastic and bituminous mix for road construction.

Mr. Krishna who was impressed with the quality of road, indicated that the technology should be exploited and used for laying of roads.

Pointing out that the universities have given their certification to this new method, the Chief Minister said the government should not have any problem in utilizing it. Prof. C.E.G. Justo, who briefed the gathering about the new technology, said plastic bags have been causing great concern, as they are not biodegradable.

But, waste plastic proved to be good for construction of road as it increases the life of roads three-fold. This apart, the frequency of road repairs would be reduced as the chances of seepage of rain water is minimized due to presence of plastic.

However, he said that cost of road construction was slightly higher compared to the conventional method. This should not deter the adoption of the technology, as the benefits are much higher than the cost, he added.

DECCAN HERALD,
Wednesday, April 10, 2002

INVESTORS CONFERENCE PRIVATE SECTOR PARTICIPATION IN MUNICIPAL SOLID WASTE MANAGEMENT IN HARYANA

The Investors Conference on Private Sector Participation in Municipal Solid Waste Management in Haryana was organized by Haryana Slum Clearance Board, on 18th November 2002 at New Delhi.

As urban centers are the engines of economic growth, provision of infrastructure is an essential element of the economic growth equation. Haryana State is the eighth most urbanized state in India (excluding Delhi) with an urbanization level of about 29 percent as per the 2001 census. The urbanization level of the state is higher than that of the national average of 27.80 percent. With the endorsement of 74th Constitutional Amendment Act by the Government of India in 1992, many administrative and financial powers have been transferred to Urban Local Bodies (ULBs), making them most important functionary in the provision of urban services.

Realizing the changing scenario, the "Haryana Slum Clearance Board (HSCB)", has initiated various interventions through loan assistance from Housing and Urban Development Corporation (HUDCO) and National Capital Region (NCR) Board to improve the essential services (both provision and delivery) within the broad framework of prevailing legal and administrative parameters.

In continuation with the aforesaid reforms, the HSCB has formulated a statewide 'Municipal Solid Waste Management Project', to fulfill the requirements, as also laid down in Municipal Solid Waste (Management and Handling) Rules, 2000, initially covering 26 urban centers of the total 68 urban



centers in the State and appointed DHV Consultants in association with MDP Consultants Private Limited and The Communities Group International as the 'Project Development and Management Consultants (PDMC)' to prepare the Detailed Project Reports.

Since most of the urban centers in Haryana are located in close vicinity, the PDMC has evolved an integrated regional strategy for the treatment and disposal of the municipal solid waste generated in various urban centers in the State. The proposed regional strategy covers all the urban centers in the State and groups them into 17 Primate Urban Centres and 32 Support Urban Centres based on various socio-economic indicators. The DPRs propose to setup common treatment plants in the 17 Primate Urban Centres with 32 Support Urban Centres sharing the facilities located in the Primate Urban Centres. The total current

estimated waste generation from all the towns in about 1130 MT per day and is expected to rise to 1800 MT per day by the year 2021. Total proposed treatment plant capacity is about 1000 MT per day with an option of Mechanical Microbial Composting for the plants with intake of more than 25 MT per day and Vermin Composting for the plants with intake less than 25 MT per day. The ULBs are already in the process of purchasing the requisite land for the proposed treatment plants along with landfills. Total estimated capital investment requirement for the above proposition is about Rs. 513 million, which includes the cost of land purchase, cost of development, cost of equipment and other miscellaneous expenses.

Emerging Issues and Development Options

An Effort towards Public-Private-People-Partnership (PPPP)



at the sources of waste generation
Involvement of NGOs/CBOs to train the rag pickers to collect recyclable wastes at the door step

The project town/cities generate about 23 percent of Recyclable Wastes every day and the Estimated Commercial Value is about Rs. 5 (five) lakhs per day.

**Segregation of Wastes at the Source
Suggestive Improvement Measures**

Households/Shops/Offices

Separate biodegradable and non-biodegradable wastes at the source of waste generation
Keep biodegradable wastes in containers of 15 litre capacity for the collection by Sanitary Workers of the local body
Not to dispose wet wastes in plastic bags
Keep non-biodegradable wastes in bags/sacks for the collection by rag pickers
Separate domestic hazardous wastes and deposit in designated bins

Technological Options Evaluated

Sanitary Landfills
Incineration

Power Generation from Wastes
Composting
Aerobic Process (Mechanical Microbial Composting)
Anaerobic Process (Vermin-Composting)

Other Methods

Anaerobic Digestion
Plasma Technology



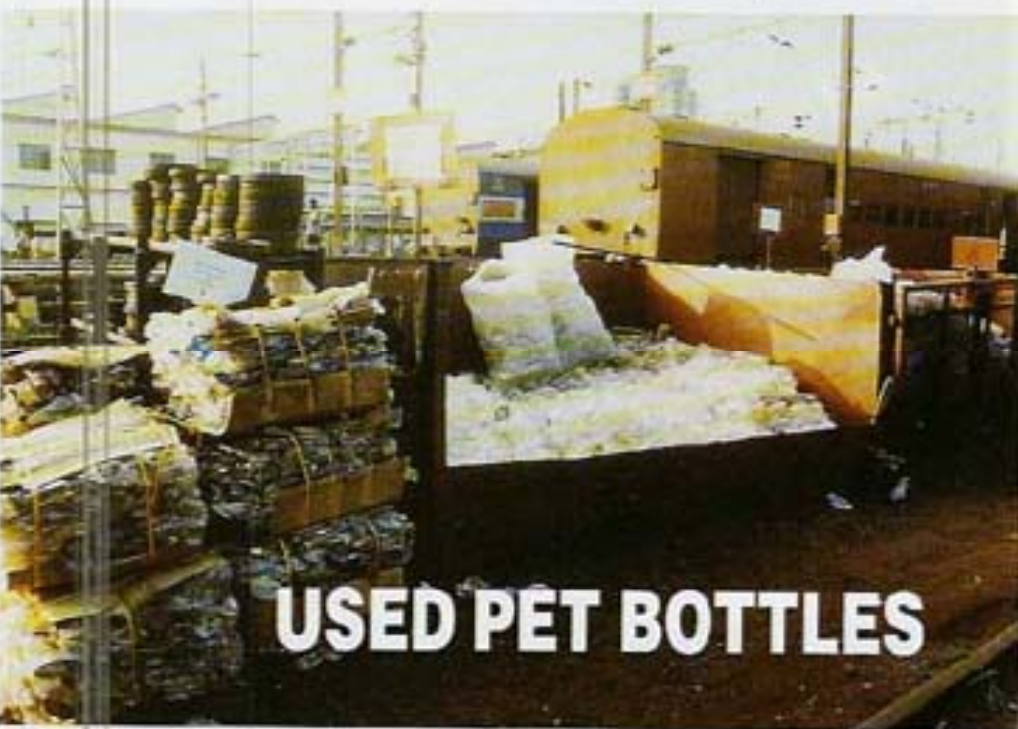
Generation of Wastes

Existing Situation

Total estimated waste generation for the whole 26 project town/cities – 1050 MT per day (343 grams/capital/day)
This includes wastes generated by the resident population, commercial and institutional establishment, markets, construction & demolition and hospital wastes

Improvement Measures

Strategy to minimize the waste adding for the municipal handling
Introduction of source segregation of wastes



Now **Bisleri**
SHOWS THE WAY...

after crushing through various sources including hill stations (Matheran) and brought back to their Mumbai unit for grinding to make it suitable for secondary use. The process consists of grinding the used PET bottles, washing the ground material with water and detergents to make them free from all impurities. The clean ground material thus obtained is sold to moulders of plastics products.

Bada Bisleri.
Same price.



Eco-Echoes had earlier carried stories on PET Bottles (Vol.2 No. 2, 3 & 4, 2001), and the need to collect used bottles for recycling. ICPE had initiated the programme at Mumbai Central Station by installing a Compactor to facilitate collection and compaction of used PET Bottles in and around the station. Then

it was Coca Cola India, which produced a 13-minute CD Film "PET- Yes Recycle, No Litter". Parle Bisleri (the pioneers in the manufacture and marketing of bottled water in India) has taken up a novel idea by installing in-house post consumer PET bottle waste grinding. The used PET bottles are collected by the company



Bisleri has set up this facility in their Mumbai unit since November 2001 and has a capacity to grind 500 Kg. per hour of PET Waste.

The above three examples of collection and recycling of PET would certainly facilitate large scale recycling of PET waste and communicate a message of environment friendly recycling practice as promoted in India. These facilities are in addition to the ones existing in Chennai, Mumbai, Kanpur & Nasik.



AWARENESS PROGRAMMES

ICPE in its efforts to clear misconceptions about plastics, carried forward its Awareness Programmes through hill stations, religious places and schools, in Matheran (Maharashtra), Tirupathi (Andhra Pradesh), Vadodara, New Delhi and Gurgaon.



ICPE along with APPMA decided to initiate the solid waste management programme and create awareness about segregation and disposal of waste with cooperation and support of TTD authorities. They have donated 300 rotomoulded plastic bins in two different colours with appropriate message printed on the bins, the green coloured bin is for collection of dry waste that is posted consumer plastic, paper, glass waste and blue for wet waste like leaves, left over food, coconuts shells etc.

MAKING TIRUPATHI PLASTICS LITTER - FREE ZONE

The Andhra Pradesh Plastic Manufacturers Association (APPMA) and ICPE have come forward to extend a helping hand to the Tirumala Tirupathi Devasthanam (TTD) to rid the temple town of plastic wastes.

transported to garbage dumps by tractor trolleys. Some rag pickers are there to segregate and retrieve plastics. Since the waste is mixed and contaminated and also contains leftover food. Hardly 3 to 4 kg. of recyclable plastic waste can be



Members of Devasthanam with Mr. K. G. Ramanathan President GCICPE

T.T.D (Tirumala Tirupathi Devasthanam) the famous Pilgrim Centre of south is visited by almost 50,000 people every day. At any given time there are almost 70,000 people at Tirumala. This results in generation of almost 50 MT of waste every day. The waste consists of coconut shells, hair, paper, card board, glass & plastics. TTD has installed bins at various places for collection of this waste. People throw all sorts of waste including leftover food in these bins. The mixed waste from these bins is

retrieved. Subsequently all the left over waste from the dumps is taken to land fill sites located almost at distance of 5 to 7 kms from the Tirumala town. Although the landfill has all types of waste because of its bright colour plastic bags are visible and the landfill looks full of plastics.

Few months back TTD board had even banned the use of plastic bags but because of efforts and presentation of APPMA the ban was withdrawn.

The programme was launched by executive office TTD in the presence of joint executive officer on 28th November 2002. Mr.K.G. Ramanathan, President GC of ICPE handed over the bins on behalf of ICPE and APPMA. Mr. Rajiv Tolat, Hon. Treasurer, ICPE, and Mr. Papa Rao Vice President - Polymers, Reliance Industries Ltd. and other office bearers of APPMA were present.

An NGO, Sukuki Exnora, will organize collection, segregation and transporting of waste for recycling and composting. The concepts well received by TTD authorities and they have pledged their full support and cooperation to make this programme successful and we are quite hopeful that this project will be a role model and segregation of waste at source and recycling of 100% of plastic waste is achieved.

Office bearers of APPMA have decided to monitor this project at regular intervals to ensure the sustenance of this prestigious project.



ICPE

*A Catalyst
for Change*



identify tourist centers or 1 or 2 pilgrim towns in India in each State and demonstrate with local authorities better waste management practices to avoid local bodies resorting to bans on plastics indiscriminately. It was agreed by the plastics industry that "we all must be seen responding to concerns of society in improving the environment" Keeping in mind the fact that several tourists centers in India were facing waste disposal problems, resulting in local bodies out of despair calling for bans, the plastic industry captains were asked to initiate talks with local bodies.

Mr. Vijay Merchant of ICPE - Governing Council identified Matheran, which showed signs of being choked with waste to try out a waste management project. Matheran Bachao Samiti, an NGO was located after enquiring with hotel owners and environment groups in Western India. Mr. Merchant made a presentation to a few office bearers of M B Samiti in Mumbai. After 4 - 5 weeks, an urgent meet was called by the Matheran Council to decide on ban of plastics, as the nuisance of litter was unmanageable. This gave ICPE a chance it was waiting for to demonstrate its sincerity of purpose by action and participation.

THE MIND SET

On 8th Aug, 2002 battling heavy rains Mr. Merchant with the Secretary & President of Matheran Bachao Samiti rushed up the hill on the rocky narrow rough road, to listen to the Chief Officer & Municipal Councillors deciding on their plans of banning plastics in the entire area as they could not manage the non biodegradable waste piling up.

After listening to the councillors Mr. Merchant explained to the local citizens & councillors of Matheran that there were ways to manage all wastes if there was sincerity from the local people. He explained there was wealth in the packaging waste lying all over the roads & near the tourist points, outside hotels & parks & the lake area in Matheran. He pointed out the answer was not to ban plastic packaging and PET water bottles, which the tourists needed but to have the

waste collected once & enforce anti litter & bin culture for the future. He prevailed upon the councillors to join in with ICPE, the Matheran Bachao Samiti and the commercial establishments in the waste collection experiment and assured that once collected the waste could be taken down the hill and disposed off economically as was done in several tourists centers in the other parts of the world. He offered to bring in recyclers to take away PET waste and also all packaging waste, which seemed useless as it was strewn all over all these years.

A MODEL PLAN WITH DATA

Immediately after this meeting working with the NGO ICPE worked on collecting all the data on waste in Matheran to help decide the modalities of collection, storage and disposal. How was the waste generated in the hill station, areas where it was a nuisance, type of waste, quantum etc. After this ICPE worked out who should do what and when. Ideas were provided for the awareness that would be needed in Matheran. ICPE has structured a model for waste disposal, anti litter enforcement and the various agencies that needed to work on the overall campaign immediately and sustain it in the future.

Simultaneously seeing the huge quantities of empty PET bottles which no one cared to take away, ICPE initiated a dialogue with major mineral water suppliers to the hill station and induced Parle Bisleri to join in the waste disposal exercise and awareness campaign as a responsible corporation.

With the research conducted by NGO on Matheran, it became apparent, that in the past 50 years no serious effort was made to collect thousands of bottles, packages, pouches, bags etc. that tourists were bringing up hill station every week. The entire hill station had become choked with litter and garbage outside every bungalow, hotel, lodge, tourist point, pathways etc. Even the open storm water drains had non-biodegradable waste choking them all along the hillside. Besides this the local residents dependent on tourist trade for livelihood

Matheran, a popular hill station is located in the State of Maharashtra, with an area of about 7.25sq.kms and local population of only 4500 people. This beautiful town of red mud and thousands of 12 meters tall trees was found by the British in India some 100 years ago as a summer resort. Today an estimated over 300,000 tourists visit this hill station each year.

The climax forests here support a variety of species of flora and are also home to a number of endangered species. This ecosystem is extremely sensitive and given the area and other factors, even small amounts of pressure on the ecology and environment have enormous pressure on it. The Supreme Court of India declared Matheran as eco-sensitive and the Ministry of Environment and Forests issued a draft notification on 6th February 2002 declaring Matheran and surrounding areas as eco-sensitive. NGOs are working actively to protect this beautiful hill station from being ruined by uncontrolled concrete construction and mindless commercial exploitation.

THE CONCERN

At the ICPE meet in April 2002, it was decided that Regional Associations



had inhibitions in attacking littering habits of visitors or conveying their concerns and hesitant to enforce discipline.

ACTION PLAN - SHORT TERM

The Municipal Council, Chief Officer Mr. Shinde & council office bearers after being convinced that they could be the soldiers of change accepted the immediate clean up plan. Within a few days they awarded temporary contracts to idle villagers to pick up all the dry waste and gather it in a selected spot for bagging it and taking it away downhill. Parle Bisleri on request from ICPE sent its team up the hill with indigenous bottle compactors for used bottles which made carrying away large quantities of PET bottles much easier for recycling.

ICPE took further initiatives. Since the wet waste made up of food and perishables, ICPE invited Vermiculture experts from Mumbai to Matheran to offer the hoteliers and the council know how for the disposal of wet garbage to combat the hygiene problems from dumping of food waste. Presentations at the Council Hall by ICPE & Vermiculturists to hoteliers convinced the councilors that a solution was possible.

Within less than 8 weeks despite the heavy monsoon season Matheran got completely transformed and by October 2002 the NGO, the hoteliers and the Municipal Councilors called a meeting inviting ICPE to access the transformation that became visible.

LONG TERM PLANS

To sustain the tempo ICPE has worked out ideas to be shared with the NGO and councilors for continued awareness campaigns. Since tourist centers have a large floating population, as tourists keep coming each week, each newcomer needs to be told about anti litter and bin culture. The local citizens and shopkeepers need to be educated of segregated waste and value of recycling both in schools and in community dwellings. The Sykes and rickshaw pullers need to learn to convey anti litter message to the customers taking rides and visiting points.

It was decided to ensure that hereafter the newly introduced waste disposal practices continued all year round and new emphasis would now be put on awareness campaigns for tourists coming into the hill station daily. Bins would be

put up on all walking paths to points to facilitate waste collection in future. This would help the 100 to 150 hotels attract more tourists, the local residents could expect more gainful employment and visitors could enjoy the natural beauty for which Matheran had a unique reputation in India a few decades ago.

UNIQUE APPRECIATION BY THE EXPERT COMMITTEE ON ECO SENSITIVE ZONE ASSESMENT FROM DELHI

On 11th and 12th November, 2002 the Expert Committee on New and Proposed Eco Sensitive Zones constituted by the Ministry of Environment and Forests New Delhi visited Matheran along with a team of officials from the Ministry and the NGO Mr. Samir Mehta. A meeting was held in Matheran on 12th November. Prof. (Dr.) H.Y. Mohan Ram, Chairman of the Expert Committee stated, "the hill station of Matheran, which the committee inspected all day was seen as remarkably clean and free of garbage". He said that "he has been all over India and no hill station was as clean and free of garbage as Matheran".



This indirectly conveys the responsible and helpful role in solid waste management improvement ICPE has played for the tourist center. The NGO Mr. Samir Mehta is delighted at the unsolicited compliment received and shared the news with ICPE with a request that this environmental action group now believes change is possible by cooperating with volunteers and wants ICPE to accept invitations to help bring changes at 2 more hill stations this year.

.....Savita Pradeep,
ICPE

SCHOOL PROGRAMMES

Vadodara :

Indian Petrochemicals Corporation Limited (IPCL) conducted Awareness Programme on Plastics Waste Management for the benefit of school students in Petrochemicals Township, Vadodara. Rallies were organized and students carried placards displaying messages. Altogether 800 students took part in the programme organized on 21st December 2002.



New Delhi :

Modern School, Vasant Vihar organized "Green Fair" on 25th October 2002. ICPE was invited to participate and display its activities. ICPE Newsletter copies were distributed to the students.

Gurgaon :



Summer Fields School, DLF City, organized a debate on "Plastics are Essential in our Daily Life ; they are not necessarily a Menace" conducted by ICPE. 120 students of Class 9th participated in the programme and out of these 12 students took part in the debate. ICPE awarded cash prizes to the students adjudged for their presentations. ICPE contributed one plastic litterbin to the school to promote bin culture.

Plastic is not necessarily a menace, we made it a menace and if we want we can make it useful for us by recycling and reusing it. Throughout the 1970's and 1980's plastic continued to find new applications, appearing in products such as microwave, cookware, personal computer housing and compact discs. My peers might even say that why use plastics when the whole concept develops such a debate but tell me can any other material do what plastic can ? Plastics today have changed our world. Imagine getting up in the morning and not using plastics, Imagine not using your toothbrush. Think about it.

To conclude I would say plastic is not a sin we

have created, it is nothing evil. We created it like I said in the beginning of my speech and it is our duty to make it of some use to us.

..... Anindita Banerjee, IX - D

Every coin has two faces, the earth has two hemispheres, similarly every thing, has merits and demerits. My friend has thrown some light on the merits of using plastics and now, I Prabudh Jain IX A will throw some light on other side that is, the demerits of using plastics.

Nowadays, everywhere there is plastic, in furniture, in utensils, in toys, and what not? But actually what is this plastic? Scientifically, plastic is a synthetic material, which can easily be moulded into any desired shape when soft and hardened to produce a durable article. And I shall say that it is very durable. Its durability is such that it can never be degraded. Yes, it is non-biodegradable.

It most extensive use in the form of polyethene. People use polyethene to carry things in it, to throw garbage in it and many other things, but they do not know about its disadvantages. Now a day, there is a great problem of improper drainage and sewage disposal. It is because of this polyethene only.

..... Prabudh Jain, IX - A

I won't find my friends amused if I tell them that the hottest clothes in the market these days are made of plastic. Plastic Tiffin and pencil boxes are fashionable among students these days, many other things which we use in our everyday life are made of plastics like electrical wires, air tight containers, disposable syringes, rain coats and what not. Even this very badge which the students council wears everyday is made of plastic. And my friends, these are only a few general examples, the applications of plastics are countless and one can only be a fool to call plastics a menace. As a matter of fact, plastic is used to clean the menace as most parts of vacuum cleaners and dustbins are made of plastic.

..... Ankur Ahuja, IX

Plastics are everywhere in our daily lives, in the furniture we sit on, the carpets we walk on, the utensils we eat with and the clothes we wear.

Just as stone, iron and bronze shaped our daily history, man made plastic materials shape our lives in an ever more permanent way. In their 100-year history, plastics have fundamentally changed our world. Today, these are integrated components of modern civilization, offering immense potential for innovation.

..... Shreya Mathur, IX-C



Students Debating.....

Plastics have become a popular material and are used in wide variety of ways. Today plastics are used to make or wrap around items, which we buy or use. The problem arises when we do not want these items any more and how we dispose of them. Plastics are used because they are cheap, easy to make and last long. Unfortunately, these qualities of plastics can make it a huge pollution problem. The cheapness means that it gets discarded easily and its long life means the survives in the environment for a long time where it can do great harm as plastics do not decompose easily and require high energy ultra violet rays to break down.

..... Ankit Lal, IX - C

In today's day-to-day life, it would be difficult to imagine a world without plastics. Among the most versatile materials ever developed, plastics can be made to resemble such diverse materials as metal, wood, glass, stone, cloth, rubber, jewels, cardboards, varnish and lather.

Plastics also serve as good electrical or heating insulations. Their versatility, durability and low cost make them ideal materials for wide use in industry and in craftwork. Also for the same reasons plastics have replaced metal, wood, glass and other materials in many applications.

..... Prachi, IX - C

Are plastics really necessary? Or, are they a nuisance in the modern world. Are they hygienic? Then why is everyone talking about replacing it. Can they be given desired shapes; sure, they changed the shape of our beautiful world into a dirty, smelly, stinking and crowded dump of plastics. All right I agree, plastics are cheap, transportable and can be made on a large scale. But why doesn't the world realize, this is the very cause of plastics being found on a large scale in every nook and corner of the world. Some may point out un-breakability, corrosion freeness, toughness and flexibility of plastics. But again, these are they reason why plastic can't be disposed.

..... Anun. K.R.



The prize winners with their teachers



Students receiving their prizes

MOBILE

TELEPHONY: THE NUMBER GAME

Mobile phones have revolutionized the communication system and altogether changed the life style of a common man in India. Just seven years ago Mobile Phone was hardly seen but today it is a prized possession of everyone in the society, may that be an Executive, an official, a student even a carpenter, plumber, painter, purohit, shopkeeper, priest, driver and the like. According to Cellular Operators Association of India (COAI), the Mobile Telephony subscriber base in India, which was just over 67 lakhs in January 2002, has increased by nearly 70 per cent to cross the 97-lakh mark in November 2002.

If the industry estimates are anything to go by, the figure must have crossed the magic 1-crore mark by December 2002. The subscriber base is expected to cross the 5-crore mark by 2006 and 12-crore by 2008. The exponential growth of the industry was mainly encouraged by a sharp drop in tariffs to the tune of 75 per cent.

Disposal of old Handsets

The electronics industry giants all over the world have worried themselves about environmentally-sound way of the



disposal of the hundreds of millions of mobile phones that enter the market each year when their life ends. It was in that context the major mobile phone manufacturers have signed a voluntary pact with the United Nations Environment Programme (UNEP), also called on network providers to share the burden of recovering 'end-of-life' handsets from their customers.

Modern cell phones are designed in **plastics** (ABS/PolyCarbonate alloy) for the body, and metals for other components.

The major cell phone market leaders like Nokia, Motorola, Philips and Samsung were among 10 makers to endorse this agreement with UNEP. "This is a groundbreaking development", UNEP Executive Director Klaus Toepfer told a news conference recently in Geneva. He believes that we will go more and more into a 'life cycle' economy and have more producer responsibility for their products from the very beginning to the end. The industry in association with UNEP will draw up effective programmes for collecting end-of-life phones. Developing countries will be helped with developing laws and regulations, and setting up recycling firms.

Ultimately the consumers everywhere would have to learn to return their old mobile phones under take-back schemes.



Mobile phone technology has advanced so much with several novel designs and features that very light handsets are available (106 grms), digital mobile digital service, colour display, multi media messaging service (MMS), wireless connection, stop watch, calendar, including integrated digital camera.

The users of this phone facility have in fact become 'addict' so much so that they feel immobile, if for some time the mobile handset is not at hand.

With the expansion of the Mobile Telephony the world over, and in India during the past decade, it would not be out of context to predict that in the very near future, a nursery school child may demand his or her mobile handset to keep in communication with parents and friends.

Thus could be the communication explosion during 21st Century.

(Source : The Financial Express, January 02, 2003
The Economic Times, Mumbai, 14 December 2002
and Editorial)

BUILDING A STRONG PROFILE

The rapid growth of pipe and profile extrusion in Asia is being driven by major construction programmes and government initiatives encouraging the use of plastics window frames. At the same time, the Chinese government is actively promoting the use of PVC window profiles in new buildings projects. New office buildings and residential estates are springing up in China everyday, implying a very high demand for window profiles.

At this year's Chinapias, Technoplast sold the Guillotine GU350 profile cutting machine on display to Shunde Liansu, a window profile company situated in Guangzhou. A second unit was delivered to the same customer in July. Another South-East Asian country, Vietnam is also expected to pass legislation for the use of plastics window profiles soon.

ALTERNATIVE MATERIALS FOR EXTRUSION

Besides the conventional plastics materials, an alliance of companies also hopes to introduce alternative materials for profile extrusion to China.

The group, which is promoting wood composite technology, comprises extrusion machinery companies such as Cincinnati Extrusion, and suppliers of processes and technology for wood profiles, such as Techwood and Fasalex.

In Malaysia, new environmental regulations



have forbidden rice farmers from burning waste materials such as rice husks. While looking for a way to dispose of rice husks in an environmentally friendly manner, it was found that husk-filled profiles are more water resistant than wood-filled ones. Furthermore, the profiles offer a cheap and strong alternative for construction. In this application, rice husk, PP and other additives are used to manufacture profiles, which have similar physical properties as timber.

As the Asian countries develop, governments here will place more emphasis on environmental protection. At the same time, companies would be looking for a more economical method of disposing their wastes. Rather than leaving them at the dump, furniture makers, timber yard owners and farmers can now be rewarded for unwanted sawdust and rice husks. It's a win-win situation

(Source: Asian Plastics News October 2002)

DO YOU KNOW

Can we Make Polyethylene Bags Biodegradable?

The Project - Objectives To eliminate non-biodegradable polyethylene bags from municipal waste and render them useful as organic matter; To develop an acceptable alternative to conventional polyethylene bags; To create a body of knowledge regarding polyethylene bags and their potential sustainability.

To reduce the threat of non-biodegradable waste to the environment by eliminating the use of non-biodegradable plastic (polyethylene) bags and switching, instead, to biodegradable (polyethylene) bags that are acceptable to all stakeholders.

The Rationale - The use of polyethylene bags in Pakistan introduced a new complexity in the municipal waste management process, as these bags do not dissolve or decompose in soil. The previous practice of using waste as manure in agricultural fields had now to be discontinued. Besides being non-biodegradable in soil, polyethylene bags also clog sewer lines and are easily carried about by wind currents. On account of these problems, municipal waste is now disposed of in huge dumps on the outskirts of the city (in some cases within the city limits.) The present project is concerned with a technique developed in Germany which makes polyethylene bags biodegradable through the addition of 30% starch to the raw material. The major problem with these bags is that they have a shelf life of barely 2 months, limiting their utility for both producers and consumers. The project will explore the acceptability of various types of

biodegradable polyethylene bags and convey the acquired information to polyethylene bag manufacturers.

Description

The project will be implemented in three distinct phases. In the first phase an exhaustive questionnaire will be designed for determining the optimal age of polyethylene bags that meets the approval of shopkeepers and consumers

alike. A survey will be conducted based on that questionnaire. During the second phase, empirical research will be conducted at the NWFP University for Engineering and Technology to ascertain the required percentage of starch to be added to the raw material for producing polyethylene bags having the optimal age identified in the previous survey. Finally, in phase three, the acquired data will be analyzed, taking into consideration all relevant factors. A plan for the dissemination of the research findings, and their use by industry will then be developed.

Source: Nadeem Bukhari, Cohort 7
Programme Monitoring Officer, UNDP, Islamabad

Green Waste Recycling opens £1m plastics recycling plant in Wales

—Richard Stirling

28 October 2002 – Welsh Assembly environment minister Sue Essex last week opened a £1m (£1.58m) plastics recycling plant in Merthyr Tydfil. Green Waste Recycling plant has been funded by grants from the Welsh Assembly and merchant banks. The company mainly recycles EPS, HIPS, LDPE, and EPP, and specialises in contaminated wastes from the fish industry. It can process up to 700 tonnes a week of plastics and employs 30 people. Green Waste has also developed products made from recycled polystyrene. Managing director Gerry Dallimore said the firm has an aggressive growth plan and aims to invest around £500,000 (£790,000) next year to make recycled polystyrene products onsite

Source: Mihir Banerji

Making packaging greener – biodegradable plastics

Biodegradable plastics made with plant-based materials have been available for many years. Their high cost, however, has meant they have never replaced traditional non-degradable plastics in the mass market. A new Australian venture is producing

affordable biodegradable plastics that might change all that.

Our whole world seems to be wrapped in plastic. Almost every product we buy most of the food we eat and the many of the liquids we drink come encased in plastic. In Australia around 1 million tonnes of plastic materials are produced each year and a further 587,000 tonnes are imported. Packaging is the largest market for plastics, accounting for over a third of the consumption of raw plastic materials – Australians use 6 billion plastic bags every year!

Plastic packaging provides excellent protection for the product, it is cheap to manufacture and seems to last forever. Lasting forever, however, is proving to be a major environmental problem. Another problem is that traditional plastics are manufactured from non-renewable resources – oil, coal and natural gas.

Plastics that break down

In an effort to overcome these shortcomings, biochemical researchers and engineers have long been seeking to develop biodegradable plastics that are made from renewable resources, such as plants.

The term biodegradable means that a substance is able to be broken down into simpler substances by the activities of living organisms, and therefore is unlikely to persist in the environment. There are many different standards used to measure biodegradability, with each country having its own. The requirements range from 90 per cent to 60 per cent decomposition of the product within 60 to 180 days of being placed in a standard composting environment.

The reason traditional plastics are not biodegradable is because their long polymer molecules are too large and too tightly bonded together to be broken apart and assimilated by decomposer organisms. However, plastics based on natural plant polymers derived from wheat or corn starch have molecules that are readily attacked and broken down by microbes.

Plastics can be produced from starch

Starch is a natural polymer. It is a white, granular carbohydrate produced by plants during photosynthesis and it serves as the plant's energy store. Cereal plants and tubers normally contain starch in large proportions. Starch can be processed directly into a bioplastic but, because it is soluble in water, articles made from starch will swell and deform when exposed to moisture, limiting its use. This problem can be overcome by modifying the starch into a different polymer. First, starch is harvested from corn, wheat or potatoes, then microorganisms transform it into lactic acid, a monomer. Finally, the lactic acid is chemically treated to cause the molecules of lactic acid to link up into long chains or polymers, which bond together to form a plastic called polylactide (PLA).

PLA can be used for products such as plant pots and disposable nappies. It has been commercially available since 1990, and certain blends have proved successful in medical implants, sutures and drug delivery systems because of their capacity to dissolve away over time. However, because PLA is significantly more expensive than conventional plastics it has failed to win widespread consumer acceptance.

Plastics can also be produced by bacteria

Another way of making biodegradable polymers involves getting bacteria to produce granules of a plastic called polyhydroxyalkanoate (PHA) inside their cells. Bacteria are simply grown in culture, and the plastic is then harvested. Going one step further, scientists have taken genes from this kind of bacteria and stitched them into corn plants, which then manufacture the plastic in their own cells.

What's the cost?

Unfortunately, as with PLA, PHA is significantly more expensive to produce and, as yet, it is not having any success

in replacing the widespread use of traditional petrochemical plastics.

Indeed, biodegradable plastic products currently on the market are from 2 to 10 times more expensive than traditional plastics. But environmentalists argue that the cheaper price of traditional plastics does not reflect their true cost when their full impact is considered. For example, when we buy a plastic bag we don't pay for its collection and waste disposal after we use it. If we added up these sorts of associated costs, traditional plastics would cost more and biodegradable plastics might be more competitive (Box 1).

Biodegradable and affordable

If cost is a major barrier to the uptake of biodegradable plastics, then the solution lies in investigating low-cost options to produce them. In Australia, the Cooperative Research Centre (CRC) for International Food Manufacture and Packaging Science is looking at ways of using basic starch, which is cheap to produce, in a variety of blends with other more expensive biodegradable polymers to produce a variety of flexible and rigid plastics. These are being made into 'film' and 'injection moulded' products such as plastic wrapping, shopping bags, bread bags, mulch films and plant pots.

Mulch film from biodegradable plastics

The CRC has developed a mulch film for farmers. Mulch films are laid over the ground around crops, to control weed growth and retain moisture. Normally, farmers use polyethylene black plastic that is pulled up after harvest and trucked away to a landfill (taking with it topsoil humus that sticks to it). However, field trials using the biodegradable mulch film on tomato and capsicum crops have shown it performs just as well as polyethylene film but can simply be ploughed into the ground after harvest. It's easier, cheaper and it enriches the soil with carbon.

*Source: Nova: Science in the news
Published by the Australian Academy of Science*

TECHTRAN POLYLENSES

Techtran Polylenes Limited is promoted by Non Resident India Professionals from USA. The company was incorporated in late eighties and commenced commercial production in 1993. The manufacturing plant is located at Bonthapalli, Medak District, some 40 kms from Hyderabad. Techtran is one of the ten, top class world plastic lens manufacturers and India's No.1 Plastic Ophthalmic lens manufacturing company. More than 50 years ago PPG Industries developed an Allyl Diglycol Carbonate resin for plastic moulding applications. This hard resin material, trade marked CR-39 monomer was also used commercially to cast plastic lenses. Over the years, plastic hard resin such as CR-39 monomer has clearly become the preferred choice for casting optical lenses. Techtran's advanced technology includes a unique prepolymerization technique using the CR-39 monomer or its equivalent.

A patented mould assembly instead of the normally used gasketing process, apart from other proprietary process methods ensure that every lens manufactured is of a top-of-the line quality that passes through extremely stringent quality control tests. Techtran Polylenes Limited produces 5.0 million lenses a year and sold with tough standards of ANSI, USFDA & DIN with the distinct advantage of consistency and uniformity, greater hardness, enhanced dieability and compatibility for AR coating. These high quality lenses meet the challenge of competition and are being exported to North American and Western Europe markets to take the world leaders head on, on their own turf. All the lenses are manufactured with the imported plant and machinery.

Continuously from the inception of the company it has been winning the Top Exporter Awards from Plexcouncil (Plastic & Linoleum Export Promotion Council, Ministry of Commerce, Government of India).

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