

1

**Petcore's Director General Address:**

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Dear Reader,

With the New Year approaching I thought it would, for once, be interesting to share some observations with you that would otherwise remain unnoticed. I'd call them "hiccups" in an otherwise fantastic success story on the growth of Europe's PET recycling. Having hiccups isn't life threatening but it can be a nuisance and momentarily keep you preoccupied. Luckily, there are tricks that make the hiccups disappear. In Europe, most hiccups in PET recycling occur when politics interfere where they should not, or do not when they should. Other hiccups are symptoms of growing pains, such as local imbalances between supply and demand.

Switzerland is one example. Swiss legislation dictates that at least 75 percent of PET bottles be collected and recycled, way above the 22.5 percent required by the EU directive for all plastic packaging waste. The Swiss national PET collection agency PRS ([www.petrecycling.ch](http://www.petrecycling.ch)) is one of the most successful collection agencies

in Greater Europe, achieving a collection rate of 76 percent. Its members pay EUR 28 million per year to accomplish this "dream-come-true" achievement. Not only does PRS operate one of the most dense networks of pretty-looking PET collection containers in the world, they also manage almost 20,000 collection stations in non-public places like offices, and are present at 400 public events to make sure that there too, PET bottles are collected for recycling. This is Switzerland, the cleanest place on earth, leading by example.

The Swiss hiccup is a thing called free riders.

As with any voluntary collection system, Switzerland has its own headache with companies refusing to participate in a nationwide effort to collect used bottles for recycling. Swiss free riders include Denner, a discount retailer with 579 shops, and Otto's, with 84 shops. Thanks to the Swiss free riders about 5 million bottles are not collected, but wasted. The result is that the Swiss collection rate is not 76, but 71 percent, 4 percent short of the national target. The Swiss authorities are threatening to impose a penalty on all, instead of calling on the free riders to do what they are supposed to do: make sure they collect at least 75 percent of the bottles. That does not sound like fair play. Instead, I would like



1

to urge the Swiss government to re-evaluate their approach, for example by imposing a punitive tax on any shop that does not meet the 75-percent requirement.

Spain is another example. Last month I visited Riberpet, a family-owned PET recycling plant near Barcelona. They have been in the business for ten years now, steadily building up their factory to what it is today: an efficient operation delivering recycled PET of good quality. Their hiccup is lethal, though. No matter how hard they try, they are unable to buy enough PET bales to keep the plant going. It is not that they don't have the money to buy the bales; they just don't get the volumes. That is very strange for a country where PET collection is growing year after year. Even PET Compañia para su reciclado, another recycling company near Valencia, are unable to buy the quantities to satisfy the needs of their state-of-the-art recycling plant.

Finally, Germany. Here is a country that was once on the frontline in establishing a collection infrastructure 15 years ago. Today, much of that lies wasted thanks to the politics-driven introduction of a deposit, at a time when nearly 80 percent of PET bottles were collected to be recycled in Europe. Today, shops do not

accept back bottles bought in other shops, no wonder that consumers are confused and angry. Where bottles are collected, they are shipped across to the other side of the world to countries like Vietnam and China, to the embarrassment of Germany's image as an environmentally responsible country. If we are lucky, it will take at

least another year before things can return back to normality.

Enough of that. In spite of the hiccups and growing pains, we remain very upbeat on further growth in PET consumption and recycling. We are immensely pleased to see that the PET recycling infrastructure and technology keeps more than at pace with its consumption. That is sustainability in the truest sense of the word.

On behalf of Petcore and its staff, I wish you Merry Christmas and a Happy New Year.

Frank Koelewijn



Frank Koelewijn

## Cultural taming of the eco-friendly PET bottle

The use of PET as packaging material for beverages has developed immensely over the last twenty years. This is to be credited to both the growth in the beverages market, and to the technical advances of the PET bottle. It is beyond doubt that the public greatly appreciates the convenience of the container: its light weight, its transparency and the fact that it is shatter proof. Nevertheless, it currently remains unclear whether society, as a whole, really appreciates it.

All through the sixties, glass bottles containing carbonated drinks were the culprit of many accidents. Indeed, from time to time, those bottles exploded under the pressure of the gases that were used to make the drinks fizzy. Imagine: on a sunny day, the internal pressure of the bottle could reach up to 6 bars!

During that decade, households started to have an ever-increasing purchasing power and marketeers soon realised that they would successfully increase beverages consumption if they introduced larger containers into the market.

The glass industry did try to take up the challenge, manufacturing bottles larger than one litre, but they failed. The bottles needed to be thicker, thus heavier, and this only resulted in further explosions. As for the attempts made to cover the glass bottles with a plastic shield to protect the glass, they turned up to be far too expensive.

The plastics industry saw this as an opportunity and started to look for a suitable macromolecule that would provide sufficient strength to bear the high pressure of a carbonated drink avoiding deformation of the bottle, leakage, but, above all, steering clear of any risk of explosion.

Talking about strength, nature presents us with many examples giving evidence that natural macromolecules are able to develop high strength: just think of a tree that withstands the huge forces of a storm. The vigour of the tree in such a circumstance is due to the atoms

of the cellulose (carbon, hydrogen and oxygen), the "rings structure" of the molecule and the "orientation" (or cristallisation) of the cellulose molecules, the building blocks of the tree.

The plastics industry needed to find a polymer that would offer the same strength that cellulose offers the tree; the polymer that would provide such resistance turned out to be PET.

Although PET is not a bio macromolecule, it bears striking resemblances with cellulose. Just like cellulose, it is solely composed of the natural elements carbon, hydrogen and oxygen and presents rings in its molecular structure, although these are quite different from the ones presented by cellulose. Moreover, similarly to cellulose, the molecules of PET are able to develop exceptional strength when oriented.

PET, widely known in its "fibre" form as "polyester", was not a newly discovered polymer. Indeed, it was (and still is) used as a reinforcing yarn in the manufacture of both car tires and textiles. The orientation necessary to achieve the strength in this case is obtained through the stretching of the fibres, right after the spinning process.

Similarly, when a preform, the precursor of the bottle, is stretched (at the right temperature) during the bottle blowing process, the macromolecules of the PET get oriented and the result a strong and durable container. Once the orientation process is optimised, a mere 35 grams of PET are sufficient to produce a 1,5 litre bottle that will safely stand an internal pressures of 6 bar.

Now, compare this to a glass bottle: in order to reach a strength similar to the one of the 1.5 litre PET bottle, you would need 750 grams of glass, meaning that, to manufacture a 1 litre glass bottle, you would need 21 times more material than you would need to manufacture a 1.5 litre PET bottle. When you realise this, it

is evident that PET greatly contributes to the "material prevention" objective, one of the most important environmental objectives, as set by the EU Packaging and Packaging Waste Directive.

"Material prevention", however, is not the only environmental parameter the PET bottle satisfies. Other environmental aspects such as energy consumption (when the PET resin is manufactured or during transport of bottles) and pollution have been subjected to scientific studies called life cycle analyses (LCAs).

LCAs carried out on PET containers looked very closely at the environmental implications of the bottle from its "cradle" to its "grave". Those LCAs have not only investigated the effects of raw materials and of bottle production on the environment, but they also looked closely at the effects of recycling and reuse of the PET container. The PET bottle has always come out with flying colours: it is at least as environmentally friendly as any other re-usable or recyclable packaging material.

Given all the advantages just presented, you would expect that the PET bottles were recognised and accepted by the public and environmentalist alike.



Picture courtesy of AMCOR

Unfortunately, it is not the case and many people using the bottle because of its convenience cannot help having a slight feeling of guilt.

Martijntje Smits, in her thesis titled "Monsterbezwering" (Taming of monsters / De culturele domesticatie van nieuwe technologie/ 2002 Editor Boom Amsterdam) investigates the underlying reasons of the controversies between experts and public opinion as far as many new technologies are concerned. As she says, those discussions tend to focus on two views: one of "doom", the other of "salvation and fascination". Those products and technologies that overstep the "natural" boundaries are valued as negative by public opinion, but positive by experts. The differing views are the result of a conflict between reason (experts) and emotion (general public).

But why should an innocuous product like a PET bottle be at the centre of this type of discussion?

The reason is, that plastic is judged as an "unnatural" product made, from scratch, by man and thus does not fit in the "natural" category. As a consequence, it is seen as a "monster". The adverse reactions against the bottle are not a result of ignorance or misunderstandings by the public: it is the reaction on a cultural phenomenon, the advent of an "unnatural" product that is not yet accepted.

Based on these grounds it is easy to understand why drink cartons given their (partial) carton structure, escape from the monster status.

However, Smits shows that cultural categories are not carved in stone: they are a social construct that can be adapted over time. The change from a "negative" perception to "positive" one however, needs a pragmatic approach of technological facts.

In this, the recycling efforts made by our industry and the work Petcore undertakes are instrumental in changing the status of the PET bottle from its present "monster" one. The current perception of the PET bottle is, as Smits says, a "matter temporarily out of place". It will change if enough efforts are made to achieve that goal.

With the acceptance of PET collection and recycling in Europe, the acknowledgment of the PET bottle as environmentally friendly and as the excellent product it is might be well on its way. However, recognition of the PET bottle in new

markets (like beer for example) will definitely require continuous work.

Petcore will need to continue its effort to free the bottle from its monster status by focussing both on the resemblance PET bears to the natural products that are culturally accepted and on the promotion of PET recycling.

Once the PET bottle will be "emotionally" and "culturally" freed, the economic and environmental arguments will be able to play their role in PET acceptance to the fullest.

## *Packaging waste recovery: Öko-Pannon p.b.c in Hungary*

Hungary, one of the 10 countries to have joined the EU earlier this year, transposed the EU Packaging and Packaging waste directive into national law in May 2002.

It was in 1996 that Öko-Pannon p.b.c., the company in charge of gathering funds for the separate collection of recyclables in Hungary, was founded by 35 packaging producers and fillers in order to transfer their take-back obligation onto the organisation.

In August 2004, the total number of companies affiliated to Öko-Pannon reached 1,100 licensees.



The business operates under the "green dot" system, yet the "green dot" symbol is not mandatory on packaging entering the Hungarian market. This means that even though packaging producers and fillers pay a fee on the amount of packaging they put onto the local market, no special marking reveals the contribution to the system. By contributing to Öko-Pannon, packers/fillers ensure that their waste is recovered, thanks to the separate collection set into place by Hungarian municipalities.

Öko-Pannon closely works with local municipalities by funding separate collection and advising on technical matters, nevertheless, collection proper of the waste is left up to the municipality, as they are the ones who know the local topography best and can answer to local demand to the fullest. Öko-Pannon collects household packaging made out of paper, glass, metal, aluminium, plastics, wood and beverage cartons, but it also takes care of industrial packaging waste.

Öko-Pannon is not the sole packaging waste coordination system operating in Hungary, however, in the beginning of 2004, it was responsible for collecting 50% of total packaging material purchased in the country and it is forecast that, at the end of 2004, the number of inhabitants that will be reached by Öko-Pannon's systems will be 20% of total population (about 2 million).

In 2003, the legal packaging recovery and recycling target in Hungary was of 40% and plastics managed to reach a recovery and recycling total of 11.5%.

Öko-Pannon puts a particular emphasis on education and has therefore developed educational programmes aimed at all children, going from kindergarten level up to secondary schools. The ÖKO Palkó and ÖKO-Panna characters, two industrious little ants, have been developed for the very aim of educating children about recycling.

Another important target of the educational programmes of Öko-Pannon are the residents of the municipalities with which Öko-Pannon has agreements. A brochure, a newsletter and a road-show have been developed by ÖKO-Pannon to present the citizen with facts on recovery and recycling of household packaging waste.



Picture courtesy of Öko-Pannon

## Latest news

- German packaging regulation: the Commission welcomes the ECJ's fundamental ruling – Commission press release

<http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/1468&format=HTML&aged=0&language=EN&guiLanguage=en>

- German packaging regulation – European Court of Justice press release:

<http://www.curia.eu.int/en/actu/communiqués/cp04/aff/cp040098en.pdf>

- German packaging regulation – European Court of Justice: Full text of judgement, Case C-463/01

[http://curia.eu.int/jurisp/cgi-bin/gettext.pl?lang=en&num=79958785C19010463&doc=T&ouvert=T&seance=ARRET&where=\(\)](http://curia.eu.int/jurisp/cgi-bin/gettext.pl?lang=en&num=79958785C19010463&doc=T&ouvert=T&seance=ARRET&where=())

- German packaging regulation – European Court of Justice: Full text of judgement, Case C-309/02

<http://curia.eu.int/jurisp/cgi-bin/form.pl?lang=en&Submit=Submit&docrequire=alldocs&numaff=C-309-02&datefs=&datefe=&nomusuel=&domaine=&mots=&resmax=100>



## Material recovery and recycling events

### Forthcoming events

#### January

30/01-02/02 Environment 2005.  
Abu Dhabi, UAE

For further information:  
Tel. ( +971)-2-444-6900,  
Fax ( +971)-2-444-6135,  
e-mail: gec@emirates.net.ae.

#### February

10-13/02 MACPLAS '05.  
Bari, Italy

For further information:  
Tel. ( +39)-02-822-8371,  
Fax ( +39)-02-575-12490.  
e-mail: info@macplas05.org.

23-25/02 GPEC 2005 Global Plastics  
Environmental Conference.  
Atlanta, Georgia

For further information:  
e-mail: seminars@4spe.org.

#### March

08-09/03 Sustainable Plastics: Biodegradability  
versus Recycling.  
Manchester, United Kingdom

For further information:  
Tel. ( +44)-1928-788-071,  
Fax ( +44)-1928-788-684.  
e-mail: ruthlane@fish.co.uk.

08-11/03 TerraTec.  
Leipzig, Germany

For further information:  
Tel. ( +49)-341-678-0,  
Fax ( +49)-341-678-8762.  
e-mail: info@terratec-leipzig.de.

08-11/03 Ecomed/Pollutec 2005.  
Barcelona, Spain

For further information:  
Tel. ( +34)-902-233-200,  
Fax ( +34)-93-233-2198.  
e-mail: info@firabcn.es.

09-12/03 Ecocity - Environment and Energy  
Savings Trade Fair.  
Prague, Czech Republic

For further information:  
Tel. ( +420)-222-891-147,  
Fax ( +420)-222-891-199.  
e-mail: dobrovska@abf.cz.

24-27/03 Ecology Istanbul 2005.  
Istanbul, Turkey

For further information:  
Tel. ( +90)-212-25-12328,  
Fax ( +90)-212-25-29886.  
e-mail: ecology@rdf.com.

#### May

04-05/05 Innovations in PET Packaging.  
Vienna, Austria

For further information:  
Tel. ( +44)-1372-802-164,  
Fax ( +44)-1372-802-243.  
e-mail: issyc@pira.com.