

FOOD PACKAGING BULLETIN

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Hong Kong: FCM Concerns

The European Union (EU) Food and Veterinary Office (FVO) carried out an inspection mission in Hong Kong from 30 November to 3 December 2009, the purpose of which was to "... assess the official controls [sic] systems in place for food contact materials for export to the EU to prevent migration of their constituents into food".

Publishing its report on 20 May, the team expressed some concerns and made three recommendations to the Hong Kong competent authorities (CAs) responsible for food contact materials (FCMs).

The inspection team consisted of two inspectors from the FVO and one Member State expert. It was undertaken as part of the FVO's "planned mission programme".

Competent Authorities

During their visit, the inspection team was accompanied by representatives from Hong Kong's CAs, the Food and Environmental Hygiene Department (FEHD) and the Customs and Excise Department (C&ED). The Centre for Food Safety (CFS) works under the FEHD and the Consumer Protection Bureau (CPB) under the C&ED.

The CFS is one of three branches of the FEHD and is responsible, amongst other things, for official controls of FCM in food establishments in Hong Kong. CFS has 500 staff in all, with approximately 80% of them being involved in enforcement activities.

According to the Consumer Goods Safety Ordinance from 1995, FCMs are considered to be consumer goods and, as such, are subject to official controls enforced by the CPB. The CPB has in total 35 staff for the control of consumer goods.

The Boundary and Port Branch (BPB) of C&ED is responsible for the customs control of seaborne cargo at the points of import and export, including imports/exports of contraband and prohibited articles.

EU/HK Background

As a special administrative region of the People's Republic of China, Hong Kong Special Administrative Region (HKSAR) enjoys a high degree of autonomy. It remains a free port, a separate customs territory and an international financial centre and is able to "maintain and develop rela-

tions, and conclude and implement agreements with foreign states and regions, and international organisations in appropriate field, including the economic, trade, fiscal, financial and monetary, shipping, communication, tourism, cultural and sports matters." The Central Government of the People's Republic of China is responsible for foreign affairs relating to Hong Kong.

In the EU, Article 50 of Regulation (EC) No 178/2002 requires that information on food and feed found to have public health implications is disseminated via the Rapid Alert System for Food and Feed (RASFF) to all Member States, and to the exporting country.

From 2004, the EU recorded 142 RASFF notifications relating to FCMs either from, or imported via, Hong Kong. 78 notifications related to the presence of primary aromatic amines (PAAs) from black nylon kitchen utensils, heavy metals from ceramic wares, high levels of formaldehyde from melamine kitchen wares, plasticizers from plastics, and overall migration.

Legal Responsibility

In Hong Kong, it is the responsibility of traders – both exporters and importers – to ensure that products – including FCMs – comply with the requirements of

importing countries. There is no CA designated either for the export control of FCMs, or for the control of FCMs transited from mainland China via Hong Kong. Importantly, neither CAs nor industry representatives were aware of export control procedures in mainland China – in particular that consignments trans-shipped to the EU via HK currently have to comply with Chinese FCM requirements rather than EU requirements.

No legal basis exists for the control of FCMs exported from Hong Kong, including products produced in mainland China.

Manufacturers

Although there is no registration system of FCM manufacturers in Hong Kong, the mission was informed by Hong Kong trade representatives that there are currently no FCMs manufactured in Hong Kong and exported to the EU. According to the CAs the vast majority of FCMs manufactured in mainland China and exported into the EU by Hong Kong traders are directly shipped without actually passing through Hong Kong territory. When consignments are trans-shipped from mainland China via Hong Kong, the customs authorities are not notified of products passing through, and therefore no export control takes place.

There are procedures in place for the communication and investigation of Rapid Alert System for Food and Feed (RASFF) notifications in Hong Kong, but there is limited communication between Hong Kong CAs and the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ) – the CA responsible for FCM controls in mainland China – with regard to the outcome of the RASFF investigations by Hong Kong authorities.

There are number of well equipped and staffed FCM laboratories at the disposal of FCM manufacturers and traders to conduct migration testing to EC standards, but the analytical methodology of visited laboratories was limited and did not cover the main substances notified through the RASFF (e.g. primary aromatic amines).

In summary, the team found that the Hong Kong authorities have no legal basis for the control of FCMs transiting from mainland China, via Hong Kong, into the EU, even though these products are not controlled to EU standards in China. Crucially, given the current legal status of the HKSAR, it is not possible for Hong Kong authorities to implement export controls.

Recommendations

The FVO report makes three recommendations to the Hong Kong CAs:

1. Ensure that FCM exported into EU via Hong Kong comply with the requirements at least equivalent to Commission Directive 2002/72/EC.
2. Consider informing the CAs of mainland China regarding the outcome of the investigation of RASFF notifications related to FCM exported into EU from mainland China via Hong Kong.
3. Consider initiating training and awareness campaigns to ensure that Hong Kong traders exporting FCM into EU are aware of the provisions set down in EU FCM legislation.

Response from HK

The Hong Kong CAs responded to the EU report as follows:

1. The position of the HKSAR means that there is no legal authority for Hong Kong to ensure that FCMs exported from, or passing through, the Territory comply with EU requirements.

With respect to laboratories, the CAs point out that the Hong Kong Accreditation Service has mutual arrangements for testing with many accreditation bodies in the EU, under the

International Laboratory Accreditation Cooperation.

Given the above, the CAs have suggested that exporters of FCMs manufactured in Hong Kong should attach certificates issued by laboratories accredited for FCM testing, and that Hong Kong traders re-exporting FCMs should “observe and comply” with relevant EC requirements, and that FCMs should be tested by competent authorities on the Chinese mainland or in Hong Kong.

2. With regard to the RASFF system, the CAs say the Hong Kong authorities will take up the issues raised with the Chinese General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ).
3. Lastly, the CAs will “enhance existing efforts” to educate the industry in Hong Kong about the requirements of FCM legislation in the EU.

It is suggested that this is done by “issuing trade circulars” and/or organizing information seminars/workshops, etc., “in collaboration with local and EC’s experts” and “taking into account the size and the interest of the relevant trade in Hong Kong”.

Plastics Can Help Resolve the World’s Big Issues

In his Chairman’s review to members and guests of the Packaging and Films Association at the 37th Annual Luncheon in London on 19 May, David Beeby said that plastics have the potential to help resolve all of the five big issues facing society – poverty, access to safe clean water, affordable food, good health and resource efficiency.

In a speech imploring members to turn away from being defensive about their products, he said that lightweight, low-carbon, strong and recyclable plastic products are capable of bringing fresh water and food, health-giving medicines and drugs, and reduced carbon impacts to societies across the globe.

“We have got a lot to be proud of, we are an innovator which sets trends, we are growing because of our credentials and because we are a key component of the solution for the future,” said Mr Beeby, adding “Yes there are challenges with plastics but we are not the problem we are very much a part of the solution.”

David Beeby also sent a clear message to the newly-formed Government when he pleaded

for long-awaited recognition for the part played by plastic packaging in preserving and protecting food from wastage.

“Food wastage is now high on everyone’s agenda and the statistics speak for themselves. We offer the most resource-efficient packaging solutions and we call upon this to be recognised,” he said.

Guest Speaker

Principal Guest Speaker, Julia Hailes, MBE, leading environmentalist and author of the *The New Green Consumer Guide* revealed her strongly pragmatic approach to seeking a more sustainable society. In a speech which was well received by the 200 strong audience of industry leaders, MPs, Government experts and retailers, the environmental adviser and consultant said she welcomed the change of Government for its promised focus on a low carbon economy.

“We need to look at the materials we use in products and we need more products which use recycled material in them,” she said, citing her work with Marks & Spencer to increase recycled content in products.

News

US: Concern Over Mis-Use of Resin Identification Code

The Association of Postconsumer Plastic Recyclers (APR) and the National Association for PET Container Resources (NAPCOR) have expressed their “growing concern” about the mis-use of the Resin Identification Code, created in 1988 by the Society of the Plastics Industry (SPI) for all rigid plastic packaging. Although its use is mandated by varying laws in 39 states, the Code is nonetheless the de-facto national standard.

Steve Alexander, Executive Director of APR, said “Mis-use of the Code is an extremely serious issue for plastics reclaimers. We see bottles labeled with such terms as ‘Compatible with PET Recycling’ and wonder what that undefined phrase means. We also see bottles that are clearly not made from PET resin being labelled as ‘#1 PETE.’ These rogue bottles can have a draconian impact on the plastics reclamation process. Many of these rogues have such low melting points that inclusion with PET bottles can shut down recycling operations.”

“The SPI Code has long been used as a tool for recycling program officials to educate consumers as to what plastic packaging is being collected for recycling,” commented Dennis Sabourin, Executive Director of NAPCOR. “The Code has been largely self-policing and, until recent years, this has been successful. While designed to indicate package resin, it is effectively the national standard for the labeling of plastic packaging for recycling purposes. Mis-use and mislabeling of a package is a significant problem for reclaiming that category of packaging, and ultimately will cause considerable disruption in the markets for recycled plastic materials.”

Primary Concern

A primary concern is that a material that is mislabeled will be combined with material that is properly labeled, thereby contaminating the entire bale of properly labeled material. Long term, Code mis-use will cause major disruptions in the marketing and handling of recycled plastic materials. Buyers and sellers of plastic materials rely on accurate labeling of bottles. If reclaimers cannot be

assured that they are truly buying a bale of just PET, HDPE, or other resin, then the buying of that material will likely cease. Given the current economic climate, such contamination, if not addressed, will have significant implications for plastics recycling.

Sabourin added “While the resin identification laws differ state to state, most, but not all, states have demonstrated that they will accept the coding of a “non conforming” package according to its compatibility within a particular recycling stream. Unfortunately, only Kentucky has set standards for recycling compatibility. Further, the financial implications of recycling compatibility are magnified when viewed in the context of Extended Producer Responsibility programs where fees are based on the cost of recycling a given stream of material.”

Alexander, whose APR members represent more than 94% of the postconsumer plastic reclamation capacity in North America, called on brand owners to continue to work with the Association to address, on a scientific basis, issues concerning the appropriate criteria for coding PET and HDPE bottles. These bottles form the major plastic recycling streams of its members.

See www.plasticsrecycling.org and www.napcor.com.

Recycling PET Saves Energy and Generates Less Greenhouse Gas

In the United States, the National Association for PET Container Resources (NAPCOR) announced May 17 the release of a new study providing life cycle inventory (LCI) data for recycled polyethylene terephthalate (PET) and high density polyethylene (HDPE) plastic resins. NAPCOR says the study indicates that incorporating recycled PET resin in the manufacture of a package “significantly reduces the environmental footprint of that package in terms of production energy required and greenhouse gas emissions”.

“This is long-sought-after information for companies that want to include environmental sustainability as one of the ways in which they evaluate their product package options,” said Tom Busard, NAPCOR Chairman and VP Global Procurement and Material Systems for Plastipak Packaging. “There’s no true sustainability without recycling, and this new study confirms and quantifies the environmental benefits of recycling PET. We’re seeing more customers requesting LCIs in order to do Life Cycle Assessments (LCAs) so that they can more accurately understand the

sustainability profiles of their packaging.” LCAs consider the complete life of a product or package, including the raw materials, manufacturing, and end of life.

The study was conducted by Franklin Associates, Ltd. and sponsored jointly by NAPCOR, the American Chemistry Council (ACC), the Association of Postconsumer Plastic Recyclers (APR), and the PET Resin Association (PETRA). Using life cycle inventory (LCI) methodology, the study determines and quantifies the energy requirements, solid wastes, and atmospheric and waterborne emissions for the processes required to collect postconsumer PET and HDPE packaging, sort and separate the material, and reprocess it into clean recycled resin.

Based on study results, as well as US Environmental Protection Agency (EPA) and Energy Information Administration (EIA) data, the total amount of PET post consumer containers recycled in 2008, if reclaimed in the US, would require approximately 30 trillion Btu less energy than the amount of energy that would be required to produce the equivalent tonnage of virgin PET resin; this is equivalent to the annual energy use of 317,000 US homes.

The corresponding savings in greenhouse gas (GHG) emissions

is 1.1 million tons of CO₂ equivalents, an amount comparable to taking 189,000 cars off the road. For a single pound of recycled PET flake, the energy use required is reduced by 84%; the GHG emissions, by 71%.¹

Sabourin said “We believe it extremely important for industry to cooperate with government and nongovernment agencies by using transparent methodologies and peer review protocols. This LCI report is extremely detailed and comprehensive in its scope; it gives our customers – and ultimately the consumer – confidence that they are making decisions based on good information.”

The study’s findings are published in *Final Report – Life Cycle Inventory of 100% Postconsumer HDPE and PET Recycled Resin from Postconsumer Containers and Packaging*, which is available from the URL below.

See www.napcor.com/PET/sustainability.html

Fully Recyclable Coating for Food & Pharmaceuticals

In Finland, the VTT Technical Research Centre says it has developed an environmentally-friendly packaging coating solution. Especially suitable for food and pharmaceutical packaging, the

coating offers a new method for manufacturing fully recyclable, thin, light and air-tight packaging materials.

Developed using an atomic layer deposition (ALD) method, the coating is said to have excellent gas permeation resistance and, as such, is particularly suitable for food and pharmaceutical products. The ALD technology, which was developed in Finland in the 1970s, has been utilised mainly in microelectronics to date.

ALD facilitates the manufacture of packaging materials which are said to be “thinner, lighter and better sealed” than traditional barrier materials. Barrier materials have the ability to prevent molecules from penetrating the packaging, which is important when protecting the product from humidity, drying or oxidation.

By using ALD coating, different functions can be integrated in the packaging material, such as properties that prevent water, oxygen, humidity, fats and aromas from permeating the packaging and protect the surface from stains and bacterial growth.

ALD thus provides savings on raw material and transport costs, as the amount of packaging material can be reduced. For example, chocolate wrappers can now be made without the aluminium-coated paper, if the carton wrap is treated

with the ALD coating method.

Other thin film methods can also produce thin coatings; however, their gas permeability is higher and the material is stiffer and breaks easily. With these competing methods, comparable gas permeation resistance is possible only if thicker films are used.

The ALD technology can improve the humidity tolerance and performance of bio-polymers, reducing the need for oil-based plastics.

Developed in Finland in the 1970s, the ALD (Atomic Layer Deposition) reactor is a device for the chemical composition of thin films. It can produce a film with the accuracy of one atomic layer. The basic materials of aluminium oxide coating are usually trimethyl aluminium and water. To date, the method has been used as a part of the manufacturing process of technical products in semiconductor industry.

Finland: Return Rate of Plastic Bottles “Almost 90%”

According to the European Association of Plastics Recycling and Recovery Organisations (EPRO), the return rate of deposit plastic bottles in Finland went up almost 15% from 2008 to 2009.

According to deposit system oper-

ator, PALPA Oy, the return rate of plastics bottles was 89%, aluminium cans 92% and glass bottles 98%.

EPRO says that new deposit plastic bottles came to shop shelves in January 2008 in Finland. It took only 2 years for consumers to reach the level of 90%, while with aluminium cans it took over 10 years.

“Using deposit is clearly a very powerful way of avoiding bottles becoming litter and waste”, said Pasi Nurminen, managing director of PALPA.

Savings from Plastics Could Power 46 Million Cars

A new study has for the first time analysed the environmental impact of 173 plastic products throughout their entire life-cycles. MEP Eija-Riitta Korhola and PlasticsEurope – The European Association of Plastics Manufacturers – presented the preview of these findings during a debate in the European Parliament in Brussels. The research, undertaken by Austrian sustainability consultancy, Denkstatt, is said to give “the clearest picture yet” of the CO₂ emissions of plastics – as opposed to alternative materials – and their role in climate change.

Final results are currently being peer reviewed by life-cycle academics and will be released in full in June, but the preview data released during the debate already suggests that plastic saves 2.300 million GJ in energy per year. This equates to 50 million tonnes of crude oil – 194 very large oil tankers – and prevents greenhouse gas (GHG) emissions of 120 million tonnes per year.

The study, entitled *Plastics Contribution to Climate Protection* and funded by the European plastics industry, identifies the share of citizens' carbon footprint attributable to plastics, and provides a carbon lifecycle analysis of plastics compared to their alternatives in packaging, transportation, building and construction and eco-product enablement (e.g. solar panels, wind turbines).

See www.theparliament.com/plastics

PET Bottle Shortage for European Recycling

The PET bottle supply for European recycling is too tight, according to the European Plastics Recyclers (EuPR) association in a May 2010 statement.

Recycling capacity has been following the increasing trend of PET consumption and collection

but the current combination of market forces has reduced the output of the European recycling plants. This situation has been caused by several factors, such as exchange rates, a longer winter, bottle weight reduction and increased export to the Far East. As a result, EuPR says the situation is “getting critical” for some recycling operations as their input material is getting scarce.

EuPR added that the situation “could easily be improved” by increasing collection ratios and focusing on local recycling. Furthermore, the big differences per country regarding the quality and/or quantity of collected materials urgently need further harmonisation. European collection and recycling are the fundamentals of a sustainable recycling system. Long distance exports do not fit in with that concept. Additionally, security of supply needs to be improved before Europe loses experienced and trained recyclers.

The EuPR says that focusing on European recycling is the key for long term sustainable resources management. Leakage of bottles to the Far East is leading to a more unsustainable situation which will affect converters, brand owners and final users. Furthermore, the benefit of the collected material – financed by European tax payers –

is being misused outside the EU instead of being used for supporting European recyclers to help Europe to move towards a recycling society.

Gap Widened Between EU and US Corrugated Basis Weights

In a new study published in April 2010 by RISI, packaging trends in Europe have been compared with the US – since they occupy similar geographic areas, have similar climates and topographical features, and their containerboard companies supply many of the same global food, beverage and consumer goods companies. The study – *The Future of Lightweight Containerboard in North America* – found that average basis weights of corrugated are now 20% lighter in Europe than the US. This reflects a proactive cultural change in Europe, with sustainability high on the agenda and government environmental initiatives with targets and penalties for non-compliance implemented across the supply chain, and supported by trade groups and NGOs.

Author of the study and industry expert, Sarilee Norton, said “A critical look at the geographic factors, the fiber considerations and the supply chain drivers that dis-

tinguish Europe from North America are not different enough to continue to explain a 20% differential in average basis weights. Sustainability, packaging efficiency and cost savings are vitally important considerations to North American corrugated users as well as those in Europe.”

Since 2000 only three new machines have been built in North America, compared with thirty-two in Europe. Modern machines, or conversions of existing machines, can produce extra-lightweight containerboard (under 26#) more quickly and economically. Many corrugators currently operating in North America are fully capable of running extra-lightweight constructions, and an analysis of current North American and European containerboard machine capabilities is included in the study. The evolution of ‘lightweighting’, including the technology developments of board machines, corrugators and converting capabilities, provides the containerboard producer and converter perspectives in the study, alongside what the trend towards lighter basis weights means for end-users.

The containerboard market is customer-driven and with the largest global retailer, Walmart aiming to reduce five percent of packaging

across its supply chain by 2013, the report anticipates that the ‘lightweighting’ trend will continue, providing an opportunity for corrugators that invest in modern machines that offer the speed, quality and versatility needed, to help their customers realise their packaging strategies.

The Future of Lightweight Containerboard in North America is said to provide a detailed analysis of the trend towards ‘lightweighting’, a history of corrugated, and capacity forecasts of the North American Containerboard market until 2014.

See www.risiinfo.com

GlassRite Wine Savings Unveiled

The results of a project to support the UK wine sector to reduce its glass waste and carbon emissions were revealed 18 May 2010.

The GlassRite Wine Project was commissioned by the UK Waste & Resources Action Programme (WRAP), to identify opportunities for the sector to make environmental and commercial savings.

Commencing in 2006 and completing in March 2010, the project has contributed CO2 savings of almost 35,000 tonnes per year by:

- Reducing glass bottle weight

by a total 27,048 tonnes through the use of lighter weight bottles

- Increasing the use of recycled glass in UK wine bottle manufacture by 44,295 tonnes per annum, by increasing bulk importation of wine for UK filling by equivalent of 190 million 75cl glass bottles.

It is also estimated that switching to bulk importation from traditional pre-bottled transportation makes a further CO2 saving of up to 40%.

Nicola Jenkin, responsible for the drinks category at WRAP, said the achievements were in line with the targets initially set but that further work could be done by the sector, building on the current momentum, to make further savings. She said “We know from our previous projects that huge opportunities continue to exist to use more lighter weight bottles and increase the use of recycled content in UK manufactured glass bottles (by bulk importing wine into the country). This is what will achieve a more resource efficient international wine supply chain.

“This second phase of the project has been about engaging with both the UK and international wine sector to identify barriers and opportunities for positive change, and to act as the catalyst to support this change.

“A particular highlight for the project has been the development of an innovative 300g screw cap bottle - the first in the world. This bottle, developed with Quinn Glass, is 40g lighter than the previous lightest bottle manufactured in the UK and is now being used by major UK supermarkets.

“If the bottle was adopted for all wine sold in the UK it would generate an annual glass saving of 153,000 tonnes – equivalent to the weight of more than 460 Jumbo Jets – and cut CO2 emissions by 119,000 tonnes.

“WRAP has also analysed opportunities for using lighter weight bottles for sparkling wines. This research, which investigates bottles produced in all the major wine producing regions, suggests that internationally, almost 175,000 tonnes of glass savings could be made through using lighter weight bottles that are still fit for purpose.

“A lot of fantastic work is being done by the international wine sector with more and more brands adopting lighter weight bottles or bulk exporting. Building on this momentum is important to ensure the sector continues to improve its environmental impact and play a role in protecting its future during this period of climatic uncertainty,” she added.

See www.wrap.org.uk/wine

INCPEN Comments on Consultation

The United Kingdom Department for Environment, Food and Rural Affairs (Defra) published a report on its consultation on proposed changes to the Producer Responsibility Obligations (Packaging Waste) Regulations in March 2010.

In response, the Industry Council for Packaging and the Environment (INCPEN) has said that it welcomes the Packaging Strategy’s recognition that packaging plays a crucial role in modern life, but “there is a fundamental question that has not been answered.” Why do we need a national packaging strategy when there is no national products strategy? Packaging only exists where products exist. The amount and type of packaging used to protect goods depends directly on the amount and types of food and other goods that people buy.

INCPEN goes on to say: “If we need a Packaging Strategy, it must be economically realistic and recognise overall net environmental gain. It should not be just about reducing and recycling packaging but should recognise the benefits of packaging and the saving of the resources in products that packaging allows.”

According to the European Com-

mission, packaging contributes 2% of greenhouse gas emissions. For competitive and environmental reasons, companies want to use only the optimum amount of packaging to protect goods and deliver all the other functions expected of packaging.

In addition, the two existing packaging laws already encourage further improvements in packaging design and the recovery and recycling of used packaging. Over the last ten years, these have resulted in significant improvements.

- Despite a huge increase in the number of products purchased, the total weight of packaging used has stayed roughly the same since 1998 when it was 175kg per person. In 2007 it was 176kg
- The UK used less packaging per person in 2007 than many other European countries – 176kg compared with 212kg in the Netherlands and Italy, 202kg in France and 196kg in Germany
- The amount of packaging recovered and recycled has increased from under 30% in 1997 to over 60% now – in 2008 62% was recycled and 66% in total recovered.

Why Higher Targets?

The consultation paper says that

without the 'demand-pull' from increased targets, compliance schemes and producers will see no difficulty in acquiring evidence to show compliance and the price of PRNs/PERNs would be low. Low PRN prices that deliver a level of recycling that is above the European average seems to be a desirable outcome. INCPEN asks "Why do more, especially when higher targets may jeopardise the quality of recycle and increase the environmental burden of sorting and cleaning?"

The UK is heavily reliant on off-shore markets for recycling used packaging and this may not be sustainable. INCPEN says it recognises that there is consumer demand to recycle more, but adds that the government "needs to provide the leadership to ensure that this happens by coordinating and requiring local authorities to act in a more consistent way."

Government also has to explain to the public that recycling is not always the best option, and that an integrated waste management system includes various energy recovery options, including energy-from-waste plants.

The organisation questions whether proposed targets – 72% by 2020 – will really be environ-

mentally beneficial and cost-effective, particularly in light of the fact that other European countries' rates are settling down at lower levels. Of the top four countries, Austria has stayed stable at 67% since the late 1990s; Germany's rate declined from 81% in 1997 to 67% in 2007. The Czech Republic reached 67% in 2007. Only Belgium exceeds the government's ambition and reached 80% in 2007.

Forecasting

The rate of change in society generally means that forecasting more than a few years ahead is becoming increasingly difficult. Most companies have three, or at most five, year plans. In 10 years time technology will have moved on in both use of packaging, and in recycling and waste treatment systems. If a 10 year target needs to be set it should only be an aspiration. It would be advisable to set actual targets only to 2015, which also happens to coincide with the European Commission's next review of the Packaging & Packaging Waste Directive.

Carbon

INCPEN feels that the consultation paper "quotes carbon figures from the Packaging Strategy

which are selective." They "exclude the beneficial effects of using packaging to extend the life/preserve the quality of food and drink and also exclude consumer related impacts such as transport to shop, refrigeration." This seems to be disingenuous since the whole purpose of using packaging is to ensure food and drink is delivered safely to consumers.

The figures are based on WRAP's carbon methodology, which has been criticised by all industry material sectors and has not yet been peer reviewed.

Non-obligated Tonnage

The growing gap between the national targets and the business targets needs to be understood and steps taken to reduce it, says INCPEN. The extra cost on obligated companies of having to compensate for non-obligated tonnage is likely to put UK companies at a disadvantage compared with competitors in other EU countries. For instance, the de minimus cut-off in Ireland is now 10tpa, compared with 50tpa in the UK.

For the consultation paper, see www.defra.gov.uk/corporate/consult/packaging-regs/consultation.pdf

Bisphenol A: the (International) Story Continues

The North American Metal Packaging Alliance (NAMPA) issued a report in March, highlighting the position of a number of national agencies with regard to Bisphenol A. The main content of the report is reported below.

The United States

On January 15, 2010, the United States Food and Drug Administration (FDA) issued an interim update of its review of bisphenol A (BPA), and announced its intention to continue its ongoing scientific research and evaluation of BPA. In a statement consistent with other international regulatory bodies, the FDA reiterated its fundamental position that the uses it has approved are safe, and that BPA exposure resulting from current approved uses have not been proven to harm children or adults. On the basis of recent studies, however, the agency slightly modified its previous stance to reflect “some” concern with BPA, a position similar to that expressed by the US National Toxicology Program (NTP). As a result, the agency is undertaking additional research to answer questions and clarify uncertainties about the risks of BPA.

Prior to its January announcement, the FDA had been reviewing emerging literature on BPA on a continuous basis for years. In 2008, it issued a report stating that there is a large body of evidence indicating that FDA-regulated products containing BPA are safe, and that exposure levels to BPA from food contact materials, including for infants and children, are below those that may cause health effects. In October of 2008, the FDA Science Board recommended that FDA re-examine its conclusion, given a host of new studies, paucity of sample data, and several other issues. The latest review and assessment occurred in response to that recommendation.

In July 2009, an independent regulatory panel in the State of California completed a thorough review of all the scientific evidence on BPA as part of a chemical review process required under Proposition 65 – the state’s listing of dangerous chemicals. Following its review, the California Developmental and Reproductive Toxicant Identification Committee (DARTIC) concluded that BPA is not toxic

and does not pose a risk to consumers. Committee members determined that BPA is not a developmental or reproductive toxicant and, as a result, the Committee voted unanimously not to include BPA on Proposition 65.

Germany

On October 2, 2009, the German Federal Institute for Risk Assessment (Bundesinstitut für Risikobewertung; BfR) reiterated its conclusions that BPA does not pose a health risk to people. In an updated Frequently Asked Questions (FAQ) document posted to its website, BfR responded to several questions about the safety of BPA in plastic baby bottles, stating that following “... careful examination of all studies, in particular the studies in the low dose range of bisphenol A, BfR comes to the conclusion in its scientific assessment that the normal use of polycarbonate bottles does not lead to a health risk from bisphenol A for infants and small children.”

In evaluating the effects of BPA, the German body concluded that BPA has low acute toxicity, has no carcinogenic effects, and though it is considered an “endocrine disruptor,” the effects are significantly different in humans as opposed to laboratory animals.

BfR said “In the human body

bisphenol A is rapidly converted into a metabolite that no longer has any oestrogenic activity and is eliminated via the kidneys. More recent findings indicate that this constitutes a major difference to rodents which present slower elimination of bisphenol A in experimental studies.”

Australia/New Zealand

In March 2009, Food Standards Australia New Zealand (FSANZ) – the independent statutory agency responsible for setting food standards in the two countries – issued an unequivocal statement that BPA does not cause cancer, and nor do low levels of exposure to BPA pose a significant health risk. FSANZ stated that it has assessed the risk to infants from exposure to BPA and “concurred with the conclusions reached by the US FDA and the [European Food Safety Authority (EFSA)] that the levels of exposure are very low and do not pose a significant health risk.”

Canada

In March 2009, Health Canada released research findings that showed levels of BPA in soft drinks were far below established regulatory levels. The report concludes “The results of this survey clearly indicate that exposure to BPA through the consumption of canned drink products would be

extremely low. The low levels of BPA found in canned drink products available for sale in Canada confirm Health Canada’s previous assessment conclusion that the current dietary exposure to BPA through food packaging uses is not expected to pose a health risk to the general population.”

As recently as July 2009, Health Canada released the results of a series of new studies investigating BPA exposure levels in baby food in glass jars with metal lids, powdered infant formula, and bottled water. The results from these three government studies provided definitive confirmation that baby food products packaged in glass jars with metal lids, powdered infant formula, and bottled water do not pose a health risk. Researchers found that all levels of BPA found in tested products were exceedingly low and all are well below the level established as safe for consumers by the Canadian government. In issuing the final reports, Canadian officials concluded that the assessments of baby food, powdered infant formula, and bottled water all confirmed that current dietary exposure is “not expected to pose a health risk to the general population, including infants and newborns.” Moreover, exposure to BPA through consumption of bottled water or jarred food would

be “extremely low” and far below the migration limit set by Health Canada.

NAMPA says this is a reaffirmation of the statements made in an October 2008 letter sent to it by Health Canada, which stated “This assessment confirmed earlier results, which indicated that the general public need not be concerned by the potential exposure to BPA regulating from its use in food packaging applications including can lining. Based on all information available to date, it has been concluded that the potential exposure to BPA from food packaging applications is extremely low and does not represent a health risk to consumers.”

Europe

In February 2010, the European Commission’s Institute for Health and Consumer Protection issued a complete risk assessment report on BPA and included a new 2008 addendum to the substance’s original 2003 report. In this latest update, European Union officials concluded that for consumers exposed to BPA “... there is at present no need for further information and/or testing or for risk reduction measures beyond those which are being applied already.” The Commission stated that there are no risks from physico-chemi-

cal properties arising from the use of BPA, and as a result there is no need for further information and/or testing and for risk reduction measures beyond those that are being applied already.

In 2006, EFSA reviewed all of the work on BPA, including the additional 200+ studies published after 2002, and concluded that the strength of the scientific database supports a five-fold increase in the TDI (Tolerable Daily Intake). This full TDI recommendation translates to a BPA-specific migration limit of 3 mg/kg/food (3,000 ppb).

In July 2008, the EFSA Panel reaffirmed its 2006 risk assessment findings on BPA. The Panel also concluded that the differences in age-dependent toxicokinetics of BPA in animals and humans would have no implication for its original findings.

Japan

In 2007, Japan's National Institute of Health and Science, in conjunction with Can Manufacturers Institute of Japan, completed a BPA migration study of the Metal Packaging Specification Standard, with various types of metal packaging in commercial use in the Japanese market. The study, sponsored by the Japanese Ministry of Health, Labor, and Welfare, concluded that BPA levels in cur-

rent metal packaging in the Japanese market are well below the lowest regulatory limit in the world of 600 ppb set in the European Union based on the TDI of 0.05 mg/kg bw/day.

United Kingdom

In 2001, the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT), an independent scientific committee that provides advice to the Food Standards Agency (FSA), the Department of Health, and other government departments and agencies in the United Kingdom, was asked to comment on the health implications of a survey on whether migration from BPA occurs from can coatings. COT carefully reviewed all the data on potential endocrine effects of BPA and acknowledged the uncertainties that exist in the current scientific understanding. Nevertheless, COT concluded that "the levels of BPA identified in canned foods analysed in the FSA survey are unlikely to be of concern to health, and that there is no reason for consumers to change their source of foodstuffs as a result of these findings."

Response to Workgroup Findings

On May 18 2010, NAMPA issued a press release in response to a National Workgroup for Safe

Markets' report on levels of bisphenol A (BPA) in canned foods, saying it "does consumers a grave disservice."

NAMPA said "Rather than providing a statistically robust sample of BPA levels in cans, the Workgroup instead tested a small number of cans and used the results to assert scientific consensus where there is none."

"We are extremely disappointed that in their zeal to educate consumers, the Workgroup pursued a clear agenda. In doing so, it failed to provide readers with the full story on BPA in canned foods," said NAMPA Chairman, Dr John Rost. "BPA-based epoxy coatings in metal packaging provide real, important, and measurable health benefits by reducing the potential for the serious and often deadly effects from food-borne illnesses. Although the science supports the continued safe use of epoxy coatings, the industry is actively pursuing alternatives to meet growing consumer demand brought on by reports like this. However, there is simply no drop-in alternative available for the widest spectrum of food and beverages. Without a thoroughly tested substitute, the report's recommendation to forgo canned goods sacrifices a technology that has prevented food-borne illnesses for more than 30 years."

“It is also unfortunate that the Workgroup relied on a controversial set of studies, using a technique that is not applicable to human exposure, to assert that it “knows” low doses cause harm. The scientific community has reached no such consensus. In fact, the report neglects a very important study recently released in the peer-reviewed *Journal of Toxicological Sciences*,” continued Dr. Rost. “This study, conducted by scientists from the Environmental Protection Agency, provides strong new scientific evidence that exposure to BPA, even at extremely low doses, is safe. The EPA study, along with the reviews of regulatory bodies across the globe, provides an important counterpoint to the report issued today.”

Any News for Us?

We are always glad to receive news items or details of projects that you might be involved in.

If you have anything to share, please email bobyorke@researchinformation.co.uk

Aluminium Beverage Can Recycling in the EU 27 Increases to 63%

The overall recycling rate for aluminium beverage cans in the enlarged EU 27, including EFTA countries and Turkey, further improved in 2008 and stands now at 63.1%, according to the European Aluminium Association (EAA). This represents an improvement from 61.8% in 2007 and 57.7% in 2006. The 5.4% increase over the past two years represents an extra carbon footprint saving of more than 310,000 tons of CO₂ equivalents.

The total number of aluminium beverage cans consumed in wider Europe rose from 32 billion in 2007 to nearly 34 billion units in 2008, resulting in an overall aluminium share of more than 70% of the total European beverage can market.

In Europe, consumers use on average 42 aluminium cans per capita. Consumption grew in Western Europe while remaining stable in most Central & Eastern European countries.

Sales of filled aluminium beverage cans for the wider European markets, including exports to non-European countries, grew by more than 5% to 39 billion, with strong growth in Western Europe of nearly 10% and 3% in Central & Eastern Europe.

Although recycling rates vary widely by country, there is a continued clear upward trend across Europe. While most countries with well established deposit or take-back systems maintained their high recycling levels, other countries have improved as well.

Local authorities and waste management operators are increasingly aware of the high scrap value of well sorted aluminium, even in difficult economic times there is increased investment in the latest sorting and recycling technologies.

End-of-life recycling of used aluminium beverage cans back into new cans or other highly valuable aluminium products such as bicycles, window frames or engine blocks saves up to 95% energy compared to primary production, helping customers such as food and drink producers to lower their carbon footprint. It also fits very well within the proposed EU strategies regarding ‘2020’ and the ‘Raw Materials Initiative’ in which resource saving has been identified as one of the key priorities, says the EAA.

See [http://www.eaa.net/upl/4/default/doc/UBC recycling stats per EU country 2008.pdf](http://www.eaa.net/upl/4/default/doc/UBC%20recycling%20stats%20per%20EU%20country%202008.pdf)

Food Contact: Time for the Industry to Take the Lead

By Jori Ringman-Beck*

Paper is no stranger to food. From tea bags to butter wrapping and dry food cartons to liquid packaging board, there is a multitude of food-related applications for paper and board products.

Untreated paper and board, which is what concerns us here, accounts for just under 3.5 percent of direct food contact packaging in value terms in the EU. The figure for coated paper and board is approximately 17 percent, although with such products, the direct contact surface is likely to be plastics or aluminium foil.

The health and safety implications of direct food contact are of course taken very seriously by the paper industry. Where it comes to consumer protection, the sector has cooperated at national government and EU level for many years, and complies with EC regulation 1935/2004, which covers all materials which come in direct contact with food.

This sounds fine until you realise that many of the materials which come into direct contact with food, such as cellulose film, plastics and ceramics, are subject to additional, material-specific directives or measures which apply uniformly throughout the EU.

Concern Created by Omission

For paper, on the other hand, the picture is fragmented, with countries such as Germany, France, the Netherlands and Italy, having legislation specific to their domestic producers, while other countries simply conform with the more general, non-material

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See <http://www.cepi.org>

specific regulation 1935/2004.

This is not to say that countries with specific legislation offer better protection to consumers. But if a food-contact packaging buyer asks the question to a paper/board supplier “do you comply with specific measures for paper and board?” the answer is likely to be “no” simply because such measures do not exist on an EU-wide basis. This could be holding back the industry, particularly when competitors in plastics, for example, can give a seemingly more satisfactory response.

The unintended impression given to buyers is that compliance for paper and board is less clear than for other materials. There is also the concern that differences between national laws, regulations and administrative provisions concerning food contact safety hinder the free movement of paper and board within the EU, and impede fair competition. Rules on recognition of regulation in different countries do of course apply, but such a system is not as “user-friendly” as it could, and should, be.

Introducing the Food Contact Guideline

So it is against this background where concern is possibly being created by omission, that a European paper packaging value chain working group has compiled the voluntary Industry Guideline for the Compliance of Paper & Board Materials and Articles for Food Contact (the Guideline). Following a meeting of stakeholders in Brussels this May, the Confederation of European Paper Industries (CEPI) will also publish Good Manufacturing Practice (GMP) for the industry. Put simply, the Guideline spells out the rules, and the GMP describes a management system for those rules to be obeyed.

GMP is not an optional bolt-on to the Guideline. Regulation 1935/2004 requires that all food contact materials be made in accordance with GMP. GMP is a concept originating from the food and

pharmaceuticals industry which covers all aspects of the manufacturing process, from the manufacturing steps themselves, to storage, personnel, written procedures, traceability, transport and complaint handling.

For companies in countries where industry-specific legislation already exists, the Guideline will act as an additional source of information, and if the Guideline becomes recognised by a particular national authority, the principle of mutual recognition would benefit operators which import material to that country.

The Guideline will refer to those aspects of quality assurance which are of most significance to the European Commission, namely to ensure that paper and

board meets the quality standards appropriate to their intended use. This means they will not endanger human health by causing an unacceptable change in the food's composition or deterioration in the food's organoleptic properties (the way it tastes, looks, feels and smells).

CEPI's aim for a paper and board industry Guideline would be that it integrates with existing management systems, offers flexibility to allow for different processes and materials, facilitates straightforward auditing, is based on realistic risk assessment and above all is specifically applicable to the manufacture of paper and board food contact material.

So there should be nothing to fear for responsible

Biosafepaper Project

Testing the Safety of Paper and Board for Food Contact

The "Biosafepaper", EU Paper Industry and Commission shared cost project within the EU Fifth Framework R&D Programme, succeeded in developing biological tests that will improve the safety assessment of paper packaging used for food products. The research team included a multi-discipline team of scientists from leading research institutes across Europe. Sixteen paper and board companies were partners.

The major aim of the project was the development of a short-term test battery for assessing the safety of paper and board intended for contact with food, in order to enable a robust risk evaluation scheme. In vitro toxicity tests, established in other spheres of human health, formed the starting point. The project was carried out at a pre-normative level in order to adapt these tests to give meaningful result on material extracted from paper and board samples.

The research project produced three tangible results:

- A standard operational procedure for extraction

protocols

- A decision-tree based approach to safety evaluation
- A new scientifically-sound recommendation for harmonised risk assessment with the introduction of correction factors (calibration of results according to actual food application).

It is accepted that work is needed to convert the pre-normative findings into a practical risk management scheme and CEPI is currently running a number of projects intended to do this. Subjects include refining the test battery, publishing the original scientific data and converting the tests to European Standards. The methodology is in line with the EU Commission's objective of developing simpler, more effective and reliable risk management approaches.

It is believed that Biosafepaper adds a new, relevant compliance tool that could be used within eventual EU legislation.

producers, nor any significant additional administrative burden. In some cases, the Guideline might reduce the testing burden, as it contains rules which will allow the reduction of testing frequency in certain cases.

A question has already been raised in the European Parliament this year about the lack of regulation regarding food contact materials, which makes this Guideline particularly timely. By the end of 2010, The European Commission will draw up a list of priorities for those materials not yet governed by specific measures.

It is believed that the concerns of EU member states and the food industry, about recent food scares and the “unregulated use” of recovered paper, will eventually drive the Commission to start work on a specific measure for paper and board. This is likely to be along the lines of plastics legislation with its emphasis on approved raw materials rather than GMP and fitness of end product which the industry believes is more appropriate.

Voluntary Regulation Preferable

With all this in mind, the Guideline offers the prefer-

able alternative of voluntary industry self regulation and there is now a short period of opportunity during which the paper and board industry can show that its own guidelines can deliver.

Standards for consumer protection are not fixed forever, so the Guideline allows for future developments, such as biological tests developed in a joint industry/EU R&D project known as Biosafepaper. This will certainly address some concerns regarding assessment of hitherto non-authorized substances found in recycled packaging.

The Guideline also may later include “correction factors” to allow for the fact that rules for limits on migration and contaminants may become more representative of the specific exposures that occur in paper and board packaging, where contact with food is often lower than with other materials, than an artificial worst-case scenario based on plastics. The Guideline is a moving document, capable of being modified quickly in the light of scientific advances.

The industry backs the Guideline. There have been two full internal industry consultations within the complete paper packaging chain, The Guideline was also peer reviewed by Pira International. Its time has come.

Award for Coca-cola Plantbottle Packaging

Coca-Cola’s “Plantbottle” packaging earned honours at the 22nd annual global DuPont Awards for Packaging Innovation, earning a gold award out of more than 160 global entrants in the overall programme.

Made of up to 30 percent plant-based material, Coca-cola describes the PlantBottle packaging as “a natural step toward the Bottle of the Future”. It is said to be the first of its kind – beverage packaging made from renewable sources that is 100 percent recyclable, like traditional PET (polyethylene terephthalate) plastic. PlantBottle packaging can be

recycled in the existing commercial recycling infrastructure.

Prestigious

The prestigious DuPont Award is the packaging industry’s longest running, independently judged global award program. Leading international industry and sustainability experts judge entrants on their excellence in innovation, sustainability and cost/waste reduction.

See www.thecoca-colacompany.com

Partition and diffusion of volatile compounds from acrylic adhesives used for food packaging multilayers manufacturing

By Elena Canellas^a, Margarita Aznar^a, Cristina Nerin^{a*} and Peter Mercea^b

Acrylic adhesives are commonly used in the manufacturing of laminates consisting of two or more substrates, such as plastics, paper, cardboard or aluminum, glued with the adhesive. Laminates are used as food packaging materials or as sticky labels attached either directly or indirectly to a foodstuff. In contrast to plastics, no specific legislation exists in the EU for adhesives used in food packaging. Nevertheless, all food contact materials must comply with the Framework Regulation (EC) 1935/2004.

The migration of a compound from a food contact material into food depends on the chemical and physical properties of the compound, the food and the polymer. In most of the situations the mass transfer from a plastic material into foodstuffs is predictable. For a reasonable prediction of migration in multilayer materials (laminates), two fundamental constants are needed: the partition coefficient of the migrating compound between the adhesive and the substrate (K_{A,S}), and the diffusion coefficient of the compound in the substrate (D_S).

The objective of this work was to study the behaviour of the compounds found on 4 acrylic adhesives (ADH1, ADH2, ADH3 and ADH4) used in the man-

ufacture of different real laminates. The laminates studied were the followings: [Al-ADH1-PE], [PP-ADH2-couche paper], [PET-ADH3-Kraft paper], [PP-ADH4-couche paper].

The analysis of the samples was carried out by solid phase microextraction coupled to gas chromatography with mass spectrometry detection (SPME-GC-MS). This technique was selected due to its high sensitivity. Partition coefficients between several types of acrylic adhesives and substrate materials (polyethylene, polypropylene, couche paper and kraft paper) were experimentally calculated. Moreover, diffusion coefficients of the compounds in these four materials were derived from experimental data. For calculating the diffusion coefficients Fick's equation was solved with numerical methods based on a one-dimensional finite differences method.

A wide variation of results for partition coefficients between the adhesive and the substrates was found due to the differences on the chemical properties of the compounds studied and the substrates used in the laminates. Acrylic adhesives used in this work were based on polar acrylic polymers, in contrast PE and PP used as substrates were non polar polymers based on polyolefin monomers. Previous works reported that sorption in cellulose fibers decreases with increasing polarity. Taking into account these polarities it is reasonable to find that polar compounds had a higher tendency to stay in the adhesive. In fact, it was observed that the compounds with the highest polarity, ethanol, 2-(2-butoxyethoxy) and dimethyladipate, got the highest partition coefficients (17736 and 7758). A high partition value entails that the compound has a high tendency to remain in the adhesive and therefore a low migration will be expected.

Literature has shown that the diffusion coefficients are related to the characteristics of the polymer: molecular weight, degree of crystallinity, glass

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transition temperature, the temperature of the environment as well as those related to the size, the shape, chemical nature and the polarity of diffusing molecules. It is known that the diffusion coefficient decreases when the degree of crystallinity increases and when the size of the sorbed molecule increases. Crystallinity of the polymer can be measured through the glass transition temperature (Tg). This is the temperature in which a polymer leaves its rigid state to become soft. Tg for PE ranges from -120 to -35°C, for PP it ranges from -25 to -15°C and for PET it is around 80°C. This implies that PET is the only one that is rigid at room temperature. This could explain that none of the compounds appeared in PET after partition or diffusion experiments. A statistical study was carried out with the diffusion coefficient data. Significant differences in diffusion values ($p < 0.01$) were obtained between PE-paper, PP-paper and PP-PE respectively. Diffusion was faster in PE, followed by paper and finally PP. The influence of the molecular weight on the diffusion coefficient was studied. Between the lightest compound (MW = 130.23 g/mol) and the heaviest compound (MW = 226.35 g/mol), it was found a difference of almost one order of magnitude in the diffusion coefficient (1.6×10^{-11} and 3.1×10^{-12} respectively). On the other hand, results for both kind of papers, kraft and couche paper were analyzed. Diffusion in porous media is usually referred to geometric properties of the pore space. Tortuosity is a common term for defining pore

geometry. In this work it was found that in general, compounds had higher diffusion coefficients in couche paper than in kraft paper. This could mean that kraft paper had a more tortuous pore space where molecules have to cross a bigger length in the same period of time Table 1 shows the migration results obtained using Tenax as food simulant. Results are expressed as micrograms of migrant compound per dm² of laminate in contact with the simulant and as micrograms of migrants per Kg of food simulant. All surface of the laminate was covered by Tenax during the test. Migrating compounds were only detected in Tenax coming from the laminates shown in the table. Only 1 compound migrated from laminate [AlADH1-PE], 1-ethyl-2-hexanol but the concentration detected (188.4 µg/Kg) was below its specific migration limit (SML) of 30 mg/Kg, according to the Directive 2002/72/EC relating to plastic materials and articles intended to come into contact with food-stuffs. Three compounds migrated from laminate [PP-ADH4-cpaper], ethanol,2-(2-butoxyethoxy) (1.2 mg/kg), ethanol,2,2-butoxyethoxy acetate (27.9 mg/Kg) and 2,4,7,9-tetramethyldec-5-yne-4,7-diol (621 µg/Kg). No legislation was found for these compounds, therefore their migration values should be below 10 µg/Kg according to Directive 2007/19/EC 12. Only 2,4,7,9-tetramethyldec-5-yne-4,7-diol was found to have a high toxicity level according to Cramer rules. In order to check the possible risks, the estimated daily intake (EDI) of the compounds was

Table 1. Migration results in Tenax expressed as µg/dm² of laminate and µg/Kg of food simulant

Compounds	[Al-ADH1-PE]		[PP-ADH4-cpaper]	
	µg/dm ²	µg/Kg	µg/dm ²	µg/Kg
1-Hexanol-2-ethyl	31.4	188.4		
Ethanol,2-(2-butoxyethoxy)			200.7	1.2x10 ³
Ethanol,2,2-butoxyethoxy acetate			4656.4	27.9x10 ³
2,4,7,9-tetramethyldec-5-yne-4,7-diol			103.5	621.0

Al: aluminum, PE: polyethylene, PP: polypropylene, cpaper: couche paper

compared to the maximum intake values recommended by Cramer for each toxicity group. Values of EDI for ethanol,2-(2-butoxyethoxy), ethanol,2,2-butoxyethoxy acetate and 2,4,7,9-tetramethyldec-5-ene-4,7-diol were 0.51, 11.7 and 0.26 mg/person/day respectively. These values were compared with the maximum recommended human exposure (mg/person/day) that was established by Cramer for each toxicity class. Only 2,4,7,9-tetramethyldec-5-ene-4,7-diol, that belong to a high toxic class according to Cramer rules, was above the recommended exposure value. Nevertheless, this compound was

considered a moderate toxic by the US EPA (US Environmental Protection Agency), which means a lowest observed adverse effect level of 200 mg/kg/day. Considering an average value of 50 Kg/person, the EDI value of 2,4,7,9-tetramethyldec-5-ene-4,7-diol can be expressed as 0.005 mg/Kg/day, this value is below the recommended USEPA value, which means that adverse effects are not expected.

[Original paper published by the RSC in Partition and diffusion of volatile compounds from acrylic adhesives used for food packaging multilayers manufacturing. *J. Mater. Chem.*, 2010. DOI: 10.1039/c0jm00514b]

Migresives: Migration from Adhesives into Food Packaging Materials – Successful Closing Conference in Ljubljana

The Migresives project consortium presented and discussed the results of more than 3 years of research work at the closing conference on 27 and 28 April in Ljubljana. 150 participants from all over Europe, the USA, Japan and Saudi Arabia attended the conference.

Migresives is a European research project (COLL-CT-2006-030309) within the 6th EU Framework Collective Research Programme in support of small and medium size enterprises. The intention of the project was to develop a pragmatic, science-based test concept to ensure the safety-in-use of adhesives used in food contact materials. Adhesives formulations are often very complex and contain numerous single components.

The presentation of the project work and results was set into the framework of expectations for the project and implications of the outcome to the legislator, the adhesive SMEs and associations, and other stakeholders – especially packaging converters, the food industry, surveillance laboratories and food safety authorities.

In the introductory session, Dr. Annette Schäfer, (European Commission, DG Sanco) pointed out the food regulatory situation of adhesives in food contact materials and her expectations for the project. The main part of the first day was the scientific presentation of the project outcome performed by the R&D partners Fraunhofer IVV, FABES, INRA, University of Zaragoza and CTCPA: analytical methods for screening and determination of adhesive substances in the materials and the migration, systematic migration and partitioning studies in order to derive parameters for the prediction of migration, the evaluation of data and mathematical modelling.

From the experiments, more than 1200 migration and diffusion and partition coefficients have been derived at different temperatures and in different materials. These are the main parameters for the prediction of migration via mathematical modelling. From these data a general estimation of the diffusion coefficients in acrylic, vinylic and rubber adhesives, as well as in plastics, paper and board could be derived.

Partition coefficients were obtained for 39 substances in 224 conditions. These can be directly used for prediction of migration. For additional substances, reference partition coefficients were proposed for the groups of polar, medium polar and non-polar substances. These tools are embedded into a testing concept and a decision tree which will be published as guidelines.

The use of the tools and the application of the decision tree were presented on the second day, as well as the multilayer modelling software developed by INRA which will shortly be available from the Migresives website (see URL below). Furthermore training lessons have been worked out by ITECH to teach and understand the food regulatory requirements, diffusion and migration processes, use of the Migresives tools and the software. A feasibility study for a complementary approach was presented by the University of Burgundy using bioassays.

The applicability of mathematical modelling to adhesive layers, to paper and board for prediction of migration into food and simulants, met high interest in the conference and further applications – e.g. in printing layers – are envisaged. The Migresives project has thus provided cost saving tools for the adhesive producer, to explore conformity related to various applications – e.g. during product development, conformity evaluation of existing products (supporting documents), for the packaging producer/converter and food industry to calculate migration and evaluate conformity for the given application.

The project proceedings can be obtained from FEICA (info@feica.eu) at a cost of 100 Euro.

Project coordination: Dr. Angela Störmer, Fraunhofer Institute for Process Engineering and Packaging IVV, 85354 Freising, Germany, angela.stoermer@ivv.fraunhofer.de

See www.migresives.eu

EFSA Actions for Non-plastic Food Contact Materials

By . Alexandre Feigenbaum

In Europe, the safety assessment of food contact materials lies within the remit of the European Food Safety Authority (EFSA).

EFSA was legally established by the European Parliament and Council Regulation EC 178/2002. That regulation laid down the general principles for food safety requirements, giving a procedure for managing crises and providing the respective responsibilities for risk assessment and risk management. As a risk assessor, EFSA produces independent scientific opinions and advice to provide a sound foundation for European policies and legislation, and to support the European Commission, European Parliament and EU Member States in taking effective risk management decisions.

In February 2009, the European Commission asked EFSA for scientific advice on the safety of 4-methylbenzophenone. This substance was found in breakfast cereals as a result of its migration from the printing inks on Food Contact Materials (FCM). Despite the high workload EFSA had to prioritize this task and finally was able to provide sound advice in very short time to help risk managers to take timely decisions. Such cases, however, do not help in building consumer confidence in the safety of food.

Similar situations had already taken place in the past, such as contamination of milk and beverages with ITX (2005) – another substance used for printing inks.

The Advisory Forum of EFSA, in its meeting in Bucharest April 2009, noted that such crises were caused by the release into foods of substances which are used to manufacture the non plastics parts of the FCM, e.g. coatings, paper and board, adhesives,

printing inks and rubber. In total, hundreds of substances are used to manufacture these materials, many of them are not evaluated for their safety. It was also stated that useful experience about evaluations of such substances is already available in Member States. The Advisory Forum and the Scientific Committee agreed that the collection and the compilation of this knowledge would allow obtaining the overview of the current situation and facilitating future discussions at the EU level.

Based on the discussion, the Executive Director of EFSA proposed to set up an ESCO Working Group on non-plastic materials which come into contact with food. The group will collect information and identify expertise which is available in the EU Member States on the evaluation of substances used in non-plastic food contact materials. It will also identify strengths and weaknesses in different approaches used for risk assessment, propose criteria for future safety evaluations and suggest further actions to be taken.

The working group is composed of experts from the EU Member States, Switzerland and Norway, on the regulation and safety assessment of food contact materials, as well as members of EFSA's scientific Panel on food contact materials, enzymes, flavourings and processing aids. The first two meetings of the WG took place in February and May 2010. The status of the evaluations/regulations at the national level was discussed, material by material, together with principles for setting priorities in the case new crisis. Discussions will continue at the meetings in July and October 2010 and the outcome and proposals will be discussed at a stakeholders meeting, early 2011.

* Dr Feigenbaumr is Head of CEF Unit, EFSA

Food Contact Materials, Enzymes, Flavourings and Processing Aids

More Good Practice for Less Waste

The European Pre-waste project on exchanging good practice for waste prevention had its inaugural meeting on 28th and 29th April in Italy.

Each European now produces on average 600kg of waste every year. Even with the increase of recycling rates, that is too much for current systems. The best waste is that which is not produced, but local and regional authorities do not always know where to start.

The Pre-waste project is intended to help by providing local authorities with examples of good practice, feasibility studies and tools for assessing what works, as well as a common methodology for local and regional waste prevention policies. It is envisaged that the project will end up with a minimum of 50 good waste prevention practices which public authorities will be able to use.

During the first meeting in Ancona, the project partners had an opportunity to start thinking about a common language and methodology for waste prevention, and to share concrete good practices for waste prevention policies on their territory.

The ten European partners involved in Pre-waste are Marche Region (IT), ORDIF – Ile-de-France Region Waste Management Observatory (FR), ACR+ – Association of Cities and Regions for Recycling and for sustainable Resource management (BE), Municipality of Roquetas de Mar (ES), Municipality of Sofia (BG), IBGE – Brussels Environment (BE), Public Cooperation Department of Ilfov County (RO), Municipality of Karlskrona (SE), Tampere Regional Solid Waste Management Ltd (FI) and WasteServ Malta (MT).

See www.acrplus.org

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If you have anything of interest that you want to share with your colleagues around the world, please contact the Editor at the address shown on the left.

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