

Plastic versus paper

In the first of a two-part look at the environmental impact of paper versus plastic packaging, **Debbie Galante Block** discovers it's a touchy subject

Eco-friendly and 'green' are the catch phrases these days, but it's up to materials suppliers, packaging manufacturers, retailers and other industry professionals to make these phrases more meaningful. Back in the late 1980s and early 1990s, the green phenomenon was talked about and written about, but, at least in the US, the desire to find answers went somewhat by the wayside as the bottom line became an issue.

Packaging analysts, today, are convinced that environmental concerns will not go away this time. Having said that, it's obviously important to sift through all of the misinformation – but that is far easier said than done. This attempt to get objective information about the pros and cons of plastics and paper

was an unexpected hot button, with many sources very successfully avoiding the question. Some people, though, were willing to discuss these hot topics.

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To start with, the Content Delivery and Storage Association (CDSA) is working on a Sustainable Initiative for Packaged Media (SIPM). As the committee chair, Rod Streeper of Entertainment Distribution Company, explains: “We are trying to address the retail push toward eco-friendly packaging. One of the keys that we established is measuring packaging in terms of carbon equivalents. That is going to be key in having a measurement. What has been lacking up to now is any coherent strategy, or objective measurement across the different kinds of packaging, plastics and paperboard.”

Some early CDSA initiatives were to promote things like recyclability or documented recycled content. Paperboard manufacturers have all different kinds of certifications, like forestry certifications, for example. “CDSA wants to combine all of those into a single metric,” says Streeper.

“The intention of SIPM is to get everyone along the value chain involved. That is

Dow Chemical – investing in making traditional plastics from natural materials



everyone from the artist to the producer to the studio that is selecting a package, all the way through to the buyer that is trying to figure out if it meets their goals in terms of a sustainable package. That will end with the consumer. The standard needs to be objective and not paperboard or plastic centric. "Carbon equivalents are a good measure of that," said Streeper.

Carbon footprints

Carbon footprints seem to be a term that all of those involved in packaging and printing need to understand. Back in September of 2007, Wal-Mart announced a partnership with the Carbon Disclosure Project (CDP) to measure the amount of energy used to create products throughout its supply chain, including the procurement, manufacturing and distribution process. Twentieth Century Fox Home Entertainment initiated an analysis of the most widely distributed DVD – a single disc in an Amaray case. Cinram was the manufacturer who participated in this project.

"It is the only study of its kind and very forward thinking in its analysis of packaged media," says Steven Feldstein, senior vice president, corporate and marketing communications, at Fox. "We initiated this vast undertaking as a first and critical step in a broader effort to lower the carbon emissions of our company and the industry as a whole."

According to the CDP report, the sum total for all emissions sources within the boundaries of this product lifecycle analysis is 124, 653 metric tons of carbon dioxide equivalent (CO₂eq) in 2006. On a per-DVD basis, this amounts to 0.75 pounds of CO₂eq per disc. It also mentions that if it were not for Cinram's efforts and the efforts of the printing suppliers, the overall footprint of the DVD would have been higher.

Whether this number is high compared to other entertainment products is unclear, as Wal-Mart and CDP say the information is proprietary to Fox. Carbon footprints are complicated, particularly in entertainment, where there are all sorts of packaging configurations.

"You definitely have a larger carbon footprint on a two-disc set or a multi-disc set than you have on a one-disc set. That's not a problem," says Streeper. A 10-disc set will have a higher footprint than one disc, but a significantly lower impact than buying 10 single discs. Up to now, according to Streeper, Wal-Mart has encouraged the concept of reducing the size of a package as a way to lower the net carbon impact.

While that might be extremely applicable to a paperboard and plastic package that surrounds a Barbie doll, it's not applicable to a paperboard box or Amaray case. With a Barbie doll, that packaging is thrown away or recycled, but with a DVD, the packaging is part of the product. "It's an important



Univenture products – founded on environmental principles



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differentiation,” said Streeper. “We want to somehow bring that into an overall single metric. With a DVD, some of the packaging might be thrown out, some of it is retained. We need a scorecard that takes that into account.”

Other factors need to be considered as part of the initiative. For example, whether the package is automated or hand-packed. “If it's automated, there will be less of an environmental impact on it. Every person

involved in the package is going to make some sort of environmental impact. Also, how heavy is the package? That translates out to freight costs. When you add all of these factors up, you get a final score.”

What this all comes down to is that a relatively easy metric is essential. Once a methodology is established, it should be fairly simple for any material to be evaluated. It will be easy to determine if a package compares favourably whether it is plastic, paper or has mixed materials.

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The packaging companies are going to try and be as responsive as they can to their customers who are looking for environmentally friendly solutions, according to Howard Rappaport, global business director for consultants Chemical Market Associates Inc (CMAI). “What might be the case in terms of energy usage and sustainability or impact on the environment, can sometimes get muddled in the overall message.”

In a lot of cases, plastics versus paper is a ‘he said, she said’ argument. Paperboard is perceived by many to be more eco-friendly than plastics. However, is it that simple? Or is banning plastics a short term solution to a long term problem? “The truth is...every material has an impact,” said Streeper. “You can bring take it to a ridiculous extreme by making the package so light and non-durable that it just gets thrown away. That's far worse for the environment than having a durable case that gets retained no matter what the material.”

Plastics certainly have an image problem, but according to CMAI's Rappaport, in the US

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Ross Youngs of Univenture

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most of the chemicals in plastics are derived from natural gas (ethane and propane), not from crude oil. Also, the gas and oil product for these plastics is pipelined from one facility to another, so there is not a lot of energy used for transportation at the beginning of the process. After the pellets are made, they are transported by rail for the most part. "At the end of the day, the amount of oil and gas used by the entire industry is less than a fraction of a percent," he says.

Paper has been recycled at higher rates than plastics for many more years, but most plastics can be recycled as well, especially the commodity plastics used in packaging, like polyethylene. "You grind it up, melt it down, and make something else out of it," says Rappaport.

Of course, if a package is to be recycled, it must be marked as what type of plastic it is, like detergent bottles and yogurt containers. That move offers potentially a zero impact to cost, according to Streeper: "You can have something that is perfectly recyclable, like polypropylene, but it needs to be marked with a waste stream number, otherwise there is no recycling facility in the US that will recycle it. There is no downside when you are changing or reworking a mould."

Rappaport mentions the very unpopular topic of incineration. Think, he says, about what a plastic package really is – a solid hydrocarbon. "It's got all of the energy value of oil and gas in it. You can use it as a fuel. If what comes out of the smokestack is cleaned up, you can burn it and get excellent fuel value out of it. But, as soon as you mention incineration, people walk away."

Additionally, as most people are aware, new materials, such as PLA and PHA, are being developed from renewable sources like sugar, starch, and corn. Dow Chemical is among the companies investing money in making traditional plastics from natural materials. Last July, they announced that, along with Brazil's

largest ethanol company, Crystalsev, they will build a world-scale facility to manufacture polyethylene from sugar. The plant is expected to be online in Brazil in 2011.

The point is, according to Rappaport, that there are a lot of eco-friendly plastic alternatives if you look for them.

As for paper...not all is created equal either. That is why there are certifications that 'green' companies need to consider. For example, The Sustainable Forestry Initiative offers certification and labelling programmes that help assure buyers that the products they're looking at come from sustainable, well-managed forests where the trees are replanted and the water and wildlife habitats are cared for responsibly.

Pre-empting a trend?

Ross Youngs, CEO and founder of Univenture says his company was started up on the eco-friendly initiative. Content providers wanted green packaging that was cheap. The easiest answer was to reduce packaging. "We were founded on reducing the packaging of a jewel

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box, and we shrunk it by 93% back in 1989 and 1990."

Youngs supported the movement to get rid of the long box, but he also felt strongly that the plastic jewel box made no sense. "The



Howard Rappaport, CMAI



Rod Streeper, CDSA

shipping costs, product costs, handling costs... its entire footprint was not justifiable to the size of the disc itself. I had calculated, back in 1990, that a change in the size of the package would save the record industry over \$200 million a year."

The main problem with reducing packaging is the direct contrast to the marketing side of the industry, which demands more for the money. Consumers, says Youngs, really don't really understand the green issue in its entirety and that is why they are easily bamboozled. "What still matters is your marketing impression, your visibility on the shelf, your impulse buy, the collectibility of the package."

As a result, there will continue to be a variety in the marketplace. All materials can be environmentally unfriendly if they are handled improperly, and environmentally friendly if they are handled properly. It takes knowledge and continual process improvement to find the right products, says Youngs. "Combinations of plastic and paper are becoming even more viable. We've been doing more and more packages that are combinations of paper, plastics, renewables and exotic materials. There is a whole range of viability out there and you will never be able to wipe out an entire segment of materials."

So, where does the industry start in terms of measuring a product's eco-friendliness? SIPM is a place to start, says Streeper: "We have a voice in this if we get involved now." If CDSA members can control, in a constructive way, discussion of how the metric is put together, then they can retain the creativity on the packaging side, and ultimately in the end do a much better job with the true goal of achieving sustainability of the packaging itself. "It's a long term vision. An opportunity exists to make an impact on the outcome We can either do that in concert with customers or suppliers or be subject to the whims of the industry." ●