The case for naked plastics

Professor **Edward Kosior** outlines a compelling case for deeply integrated design for optimum recycling and clear plastics, and discusses how brands can deliver truly authentic sustainable solutions

What would packaging that is designed to be as recyclable as possible look like?

Next time you are in a supermarket, take a long hard look at the packaging that surrounds you. It doesn't take much scrutiny to notice that most of it has been designed to attract you, the consumer.

What is less visible to the uninitiated is that, despite most brands' sustainability claims, very little, if any, thought has gone into the design in terms of optimising recycling. It may not be immediately noticeable, but recycling does not feature prominently on most brand-owners' priority lists.

Most packaging we see has been designed with the primary purpose of engaging with the consumer, protecting the contents within and telling a strong brand story. What recyclability features it may include are most probably not by design and they are certainly not clearly thought through.

Yet, what if we flipped the model around and designed packaging to be as recyclable as possible? What would that look like?

The case for caps

Let's start with a PET bottle. PET is one of the most widely recyclable polymers available, yet the caps are made of HDPE or polypropylene, depending on the brand-owner's choice. Separating them into their relevant polymer types is a nightmare and as a consequence they end up in low-value applications as a mixture, or in landfill due to their size and because they have detached from the bottle.

In an ideal world all caps would be made of one polymer and would never leave the bottle. There is no reason why we can't adopt one polymer type per country, at least, to simplify the separation problem. The next vital step would be to make all caps without pigment (natural) or possibly white. This seemingly small detail would mean we would actually capture, recycle and reuse all caps ad-infinitum.

Instead, we are drowning in a sea of multi-coloured caps that get separated from their bottles – at least until legislation arrives mandating the use of tethered caps.

Surely the consumer in each of us does not need a colour-coded cap to recognise our favourite beverage? Wouldn't we prefer a cleaner planet? It might seem like a small thing but over the last 30 years, more than 20 million bottle caps and lids were found during beach cleaning activities around the world.

All label, no glue

Moving on down the bottle to the label, it is great to be able to showcase Evian's shift towards a crystal-clear bottle with no label whatsoever. This is a bold sustainability statement but for one minor detail – the cap is pink. To truly make a difference, every element of a pack's design needs to centre on its recycling potential. In truth, were Evian to create a totally 'naked' bottle from cap to base, the company's statement would be much louder.

Certainly, we need to ditch the pressure-sensitive labels that contaminate recycling streams and opt instead for stretch labels or shrink sleeves. The more aggressive glues are particularly an issue for recyclers of PET and HDPE packaging. Going further, we need to ensure that these labels don't bleed inks. The labels themselves need to be readily separated and recycled to avoid any unwanted waste.

These types of design details would greatly contribute to the total recyclability of a pack and actually only require a change in mindset rather than a massive upheaval in behaviour. In this instance, challenging the status quo is more a matter of adopting good design principles than embracing recyclability to the core.

Back to source

Of course, there is little point in transforming the design details without going back to the source of the actual material used in the container. Take an HDPE milk bottle. Many resin manufacturers will use the minimum required stabiliser, aimed at preventing reactions that can lead to polymer degradation during processing and through exposure to external weathering.

This, in turn, impacts on the quality of the recycled material. This will be especially true once we enter the circular economy, where plastics will go through the loop many times, particularly as the level of recycled content reaches beyond 50 per cent.

If instead of being minimally-stabilised, the bottles were designed for constant recycling,

the plastics quality could be maintained, and this would improve recycling rates. In many cases, the stabilisers need to be present during their initial processing as this is where oxidation reactions can occur. These can in turn trigger issues further down the line, such as gel formation or photochemical reactions during outdoor exposure.

Seeing through colours

As for the rainbow of colours brands are currently deploying, this only goes to show how little recycling features in the design remit.

Coloured plastics packaging is much harder to recycle economically than clear plastics, since there is little demand for the resulting 'recycling grey' that we get when we mix all these colours. Unscrambling the colours may be possible via sorting equipment, but the multitude of colour variants means that it is impossible to produce a colour that would suit any one brand-owner.

The irony is that, in many cases, the coloured plastics is often covered by a large label as a means of marketing, making the package below invisible. It might as well be grey or natural, saving the pigment costs and improving the final recyclability.

There is no doubt that colour is one of packaging designers' key tools, yet the impact on a pack's recyclability is huge. Tomorrow's ideal bottle would be either transparent, white or self-coloured grey, and shrink sleeves would be used to ensure the brand comes across loud and clear.

Tomorrow's bottle

The fact is that were we to craft the type of highly-recyclable bottle I have described above, we would end up with a very close replica of a brand's original product. Only an expert would be able to notice the difference. So, is it cost that is creating a roadblock?

A 360-degree recyclable bottle should actually cost less to produce, and here is why. Starting with the caps manufactured from one polymer type in clear or white would mean a greater opportunity to recycle caps back into new caps, which would reduce the need for new virgin resin.

Shedding the colours of the actual bottle would vastly reduce masterbatch costs, and all the design cues would be focused on the label, with self-peeling or dissolvable glue, or stretch-sleeve. Recycling yields would increase, making high-quality recycled material more plentiful and less expensive. And the actual brand recycling story would be authentic.

Ultimately, this is not about creating a green image but rather about developing a deep green and lighter footprint that is sustainable.

What next?

The big question, therefore, is why would we not make these changes? We now have the cutting-edge technology to identify, sort and decontaminate post-consumer waste – all we need now is for brands to embrace the notion that what we currently deem 'recyclable' is not good enough.

Branding itself also needs to become more sustainable. According to brand consultant Mark Ritson, only about 20 per cent of advertising enables people to remember the brand. The rest is whitewash. If we could strip back to the essentials of branding and put recycling at the heart of the branding story, we may even end up with a more memorable packaging design. Certainly, we would finally be creating a genuine circular economy.

Working out good design principles for recycling requires brand-owners to step up and voluntarily take responsibility for every facet of their packaging. Surely this is far better than governments imposing penalties.

After all, we all share the same planet, and it is time to take a real stand for how we look after it.

Professor Edward Kosior is managing director of Nextek. Web: nextek.org