

IMPROVING RECYCLABILITY IN DRUG DELIVERY

In this article Julien Tremblin, General Manager at TerraCycle Europe, looks at the recyclability challenges facing the drug delivery market and considers how companies can enhance the recyclability of their packaging and devices.

The drug delivery industry is uniquely beholden to stringent regulations that make it challenging to incorporate recycled materials into packaging and devices, as well as to recycle these items at their end of life. The good news is that the industry is not too far behind others, such as the consumer packaged goods (CPGs) industry; the bad news is, nor is it better. Recycling rates are low across all industries, and the drug delivery industry has some of the lowest rates of all.

The drug delivery industry is frequently granted exemptions and extended timelines for meeting the changes and targets that are required of other sectors. The European Commission's Draft Packaging Regulation from November 2022, for example, specifies that medical packaging is exempt from the 2030 recyclability targets until

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2034.¹ However, in a world where awareness of the waste crisis is at an all-time high, consumers are looking for products and manufacturers that embrace sustainability and recyclability. According to research from 2022, some 72% of consumers consider sustainability in their purchasing decisions.² In other words, although the drug delivery industry has looser deadlines to hit recyclability targets, customers will favour those manufacturers and brands that offer solutions right now (Figure 1).



Figure 1: TerraCycle's Metered Dose Inhalers Zero Waste Box. For more information about the Zero Waste Box solutions visit zerowasteboxes.terracycle.co.uk



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WHAT ARE THE RECYCLABILITY CHALLENGES FACING DRUG DELIVERY?

Obstacles to improving recyclability include:

- The plastics commonly used in the industry are often complex, and easily recyclable alternatives are few and far between
- Products may contain elements and chemicals that are considered hazardous and have to be disposed of in certain ways, such as incineration
- A conservative attitude towards the disposal of pharmaceutical waste, meaning recyclable packaging can sometimes be sent for incineration for fear of breaking medical waste disposal laws.

It is also important to understand what is meant by the term “recyclability”. While almost everything is technically recyclable, councils and municipalities only recycle items when the recycled end-product is worth more than the cost of recycling process. Drug delivery products tend to be composed of multiple materials that enable them to serve their medical function. This makes the recycling process more complex and therefore more costly. For example, inhalers are made up of a casing that typically includes one or more types of plastic, as well as a metal canister that needs to be separated and sorted to be properly recycled. This is why so many medical devices and packaging are considered “unrecyclable”.

WHAT CAN BE DONE TO IMPROVE RECYCLABILITY?

It is unlikely that most devices and primary packaging for drug delivery will have municipal recycling solutions available

in the near future. However, there are alternative solutions readily available that can improve recyclability today.

A lot of the drug delivery devices and packaging currently sent to landfills or incineration are done so out of fear of breaching regulations around hazardous waste, when, in fact, the WHO has estimated that only 15% of all healthcare waste is actually considered hazardous.³ Improving the recycling rates of the remaining 85% of the industry’s waste should be a priority, and there are various ways to achieve this. It is possible to find solutions for almost all waste streams that are not considered hazardous. By partnering with drug delivery manufacturers, industry-first recycling programmes have been developed for a wide range of items, including medicine blister packs, syringe filters and inhalers, which cannot be recycled municipally but are not classified as hazardous waste.

However, the key to achieving wide-scale recyclability is by factoring it into each product at the design stage. Even considering industry-specific requirements, certain elements of drug delivery products, including anything that does not come into contact with the drug or patient, can and should be made out of recycled or recyclable materials wherever possible. Packaging should be kept to mono-materials, such as aluminium, glass and widely recyclable plastics like polyethylene terephthalate (PET), and the same is true for the devices themselves, wherever possible.

In the case of drug delivery products and packaging where using multiple materials is unavoidable, recyclability should still be a priority. Taking medicine blister packs as an example, the need to be able to open the pack easily and safely means that the use of two different materials is necessary – usually plastic and aluminium – and they are therefore excluded from municipal

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recycling. However, by making the main polymer as recyclable as possible – think PET and not polyvinyl chloride (PVC), for example – it makes existing solutions more efficient in terms of costs and processing, but also plans for a time when the infrastructure may exist to separate and process these materials at a municipal level.

Environmental impact is measured in reduction as well as recyclability rates. Favouring light and easy-to-separate materials will not only reduce the amount of packaging waste generated per product but also limit complexities and costs at the processing stage. Similarly, the industry should strive for consistency instead of offering similar products in a range of materials. The current model sees a vast range of blister packs coming to market, some made from PVC, some PET, some polychlorotrifluoroethylene (PCTFE) and so on, with little thought towards streamlining materials.

WHAT DOES THE FUTURE LOOK LIKE?

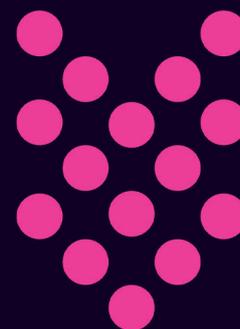
The drug delivery sector has benefited from exemptions and lengthier timelines to deliver on sustainability regulation, but this is expected to change over the next five to ten years as the focus shifts away from waste in the CPG industry and moves to more

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specialist industries. An upsurge can already be seen in the number of pharmaceutical and drug delivery companies looking for sustainability solutions to offer consumers, looking to get ahead of future regulation and growing consumer expectations. By taking measures now, such as recycling primary packaging and integrating recycled materials into their supply chain, moving to mono-materials and pushing regulators to declassify medical waste that is wrongly seen as hazardous so that it can be recycled, companies can demonstrate to stakeholders and consumers that they have the future of the planet firmly in mind.

ABOUT THE COMPANY

TerraCycle is an international leader in innovative sustainability solutions, creating and operating first-of-their-kind platforms in recycling, recycled materials and reuse. Across 21 countries, TerraCycle is on a mission to rethink waste and develop practical solutions for today's complex waste challenges including industry-first recycling solutions for medicine blister packs, syringe filters and inhalers. The company engages an expansive multi stakeholder community across a wide range of accessible programmes, from Fortune 500 companies to schools and individuals.

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ABOUT THE AUTHOR

Julien Tremblin is the General Manager of TerraCycle Europe, a global leader in the collection and repurposing of otherwise non-recyclable post-consumer and post-industrial waste. Through TerraCycle, Mr Tremblin is pioneering a new waste management process across TerraCycle's 12 European markets (UK, Republic of Ireland, France, Spain, Germany, Austria, Switzerland, the Netherlands, Belgium, Norway, Sweden and Denmark) in a period of real innovation and exciting growth for the business. This process involves manufacturers, retailers, governments and consumers creating circular solutions for materials such as pharmaceutical waste, laboratory waste, PPE waste, food packaging and even beach plastics that otherwise have no other path to be recycled.

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