



AdeptGroup ENGINEERING EXCELLENCE

Sustainability in Life Sciences



Sustainable Packaging for the Life Sciences Industry

For professionals in the packaging space, sustainability has been a key part of nearly every conversation for years. Brands in the CPG and food & beverage spaces are leading the way by pledging to reduce their carbon footprints, setting aggressive sustainability goals and investing in promising new solutions to make their products and packaging more environmentally friendly. Many packaging departments in the life sciences industry have lagged as their focus rightfully remains on product safety and regulatory compliance, but the days of brands in this space getting a free pass on sustainability may be coming to a close.

Pressure from regulators and corporate responsibility obligations may soon force life sciences brands to take their place among sustainability leaders instead of following in the footsteps of brands from less highly regulated industries. This paper will cover the key drivers behind the shift, the unique challenges facing packaging departments in the industry and first steps brands in the life sciences industry can take to become leaders in packaging sustainability.





Reasons Behind the **Push for Sustainability**

One of the main driving forces for the Pharmaceutical and Medical device industries is social responsibility. Mitigating their impact on the environment is a critical need. The life sciences industry is a major contributor of the greenhouse gasses that drive climate change. Pharmaceutical brands, for example, produced roughly the equivalent of 52 megatons of carbon dioxide in 2015, more than the 46-megaton equivalent produced by the global automotive production sector despite being 28% smaller by revenue. Medical device manufacturers likely aren't far behind. A 2010 study estimates that 22% of NHS England's greenhouse gas emissions are attributable to pharmaceuticals, while its medical device industry contributed 8%.



In addition to social responsibility, maintaining a competitive advantage is becoming increasingly relevant in these industries. Some of the biggest companies in the industry are already making plans to improve their impact on the environment. AstraZeneca, Novartis and GSK all plan to be carbon neutral by 2025 and carbon negative across their supply chains by 2030. Johnson & Johnson, Amgen Inc. and Roche Holding AG have all made similar pledges, along with goals like reducing their water and energy consumption.

Additionally, regulations and regulatory considerations to improve and communicate recyclability, shift end of life responsibility to the producer, and reimagine packaging to reduce its impact on the environment are being discussed across the globe. While the life sciences industry will likely not be the first expected to comply as regulations begin to roll out, it's only a matter of time until the same expectations, with obvious exceptions, will apply to these industries.



Unique Challenges for Life Science Companies

All sustainability initiatives come with tradeoffs. Many of those tradeoffs are common to brands in all industries, but some may be more challenging for the life sciences industry due to its high bar for regulatory compliance. Trading out traditional packaging materials for more sustainable materials impacts many other aspects of packaging operations and, most importantly, comes with costs in terms of time or money.

A common approach to improving packaging sustainability in other industries is material reduction. The biggest challenge that comes with this approach is determining how much material can be reduced before it impacts the package's ability to protect the product both in testing and in the real-world distribution environment. The prototyping and testing processes can be costly and time consuming. They also require an evaluation of the current packaging equipment to determine if the changes are compatible or if new equipment is needed.

Before making any changes to improve sustainability, the packaging team needs to consider if the product includes biohazards that force the packaging into a non-sustainable waste stream. Some products require packaging with specific materials to preserve safety for the end user and anyone who handles the product during distribution, and there may not be sustainable alternatives to those materials.

Packaging for pharmaceuticals, medical devices and other therapeutic products is subject to strict requirements for sterilization, barrier properties and anti-counterfeiting, which are intended to ensure the product's safety and efficacy. If more sustainable materials are not able to clear the high bar set by those requirements, it will not be viable. Stated plainly, regulatory compliance takes precedence over sustainability concerns and narrows the available options.





Working to **Overcome** Those Challenges

While the combined effects of these many challenges makes improving the sustainability of packaging for brands in the life sciences industry complicated, there are companies working every day to identify and develop viable options. jARDEN Plastic Solutions, SACMI Group, and Milliken teamed up in recently to develop pharmaceutical bottles that are 28% lighter than standard designs. Swiss packaging supplier Hoffmann Neopac published a design guide for tube packaging that recommends thinner walls for the body and shoulders of tubes and using the same material for the cap to aid in the recycling process. It is important to note, however, that tube formats are not widely accepted at recycling facilities at this time, regardless of material. Italian pharmaceutical packaging manufacturer Bormioli Phara introduced pharma-grade rPET packaging that matches the transparency and physical and mechanical properties that match virgin PET.



A handful of innovators in the CPG and beverage packaging spaces are also creating sustainable solutions that have potential for life sciences brands. Several of these manufacturers have announced recyclable paper or wood pulp bottles with thin plastic layers or lightweight coatings that provide barrier properties and don't affect the bottles' recyclability. In addition to their recyclability, these bottles are lighter than plastic or glass bottles, meaning they can reduce both emissions and costs from shipping.

Looking beyond primary packaging, secondary packaging can be assessed for pack optimization and corrugate lightweighting. For tertiary packaging, the concept of replacing wood pallets with lightweight, recyclable slip sheets is gaining traction. Like many sustainability moves, it can also double as an opportunity for cost savings. As the cost of wood continues to rise, pallets are becoming a commodity that is no longer a low-cost, disposable part of packaging. Slip sheets made of fiberboard typically weigh 2 to 3 pounds, a small fraction of a 30-plus pound pallet, and can be easily recycled into new paper products, which keeps them out of the waste stream. They can have an identical footprint to a pallet but occupy a much smaller space under a unit load. This allows for a 10% increase in most net payloads of unitized product, savings on costs and emissions from fuel during shipping.



Getting Started with Sustainability

For life sciences brands that are ready to take the next step in their sustainability journey, there are a handful of steps they can take to move to the front of the pack in terms of sustainable packaging.

Conduct a Sustainability Audit

A sustainability audit begins with an evaluation of the materials and processes used for packaging to determine the best opportunities to improve sustainability. It may include a life cycle assessment (LCA) that examines the environmental impact of the package through each stage of its life cycle, including raw material extraction/production, manufacturing, packaging and distribution, use, end of life and, potentially, recycling. The outcome of the audit is a set of sustainability goals, benchmarks for progress toward those goals and clear steps to move from the current state to the desired state of sustainable packaging. This clear vision and set of actionable steps facilitate discussions that can generate alignment throughout the organization, ensuring everyone is pulling in the same direction when it comes to sustainability.

Redesign with a Sustainability Mindset

Leveraging the results of the sustainability audit, seek opportunities for easy wins, replacing the least sustainable packaging and packaging materials with more sustainable alternatives. When possible, swap out virgin materials for recycled materials and replace non-recyclable materials like PVC or polystyrene with recyclable PET and HDPE. Paper and paperboard may also be options to help phase out non-recyclable plastics, but it is important to be aware of how coatings and other additives used to add barrier properties may impact the paper's recyclability. Some coatings can be separated from the paper/paperboard material before recycling and others can be recycled along without separation, but there are also many coatings that render the entire package unrecyclable.

Consult with an Expert

If the packaging team lacks the expertise to identify packaging alternatives that meet the needs of their product while improving sustainability, it can help to consult with a sustainability expert who understands your product and its packaging requirements. Among many added benefits, a packaging expert who understands sustainability can prevent a company from overpaying and ensure that a sustainability program also provides cost savings benefits. They can provide an objective assessment of where the company currently stands in regard to sustainability and help map out a course toward realistic sustainability goals, avoiding those that are not achievable, and manage projects the move the sustainability needle for the brand.

An expert with the right experience can do all of this while ensuring the products remain compliant with the regulations that govern the industry.



Contact Us

Partner with **Adept**

If your brand is ready to begin a sustainable packaging program or accelerate progress toward existing sustainability goals, [get in touch](#). Our team of experts has the experience to guide brands in the life sciences toward a more sustainable future.

