How to design materials for inhalation devices to be more sustainable?

Beate Treffler[1]

[1]Avient Corporation, Performance Masterbatches (DE) GmbH, Kornkamp 50, D-22926 Ahrensburg, Germany

Introduction

Today, one unpleasant effect of the wide use of plastics is the increase in waste leading to marine littering, micro-plastics... Although the Healthcare market is a minor contributor, first steps can be taken. Medical devices producers take actions to develop more sustainable solutions. What are benefits of using a bio-based material rather than fossil-fuel based plastics? What are the current solutions offered to reduce the carbon footprint of your pulmonary and nasal drug delivery devices?

I / Carbon footprint reduction

Carbon footprint reduction can be achieved by using biobased polymers from renewable feedstock. These resins are displayed to consume CO2 and not generate CO2 (defined until the factory gate).

II/ Weight reduction via chemical foaming agents

Chemical foaming agents are substances which are activated at typical thermoplastic polymer processing temperatures, generating a foamed structure. A weight reduction of 20% can be achieved in parts with wall thicknesses of 2 mm.

III/ Outlook for “greener” inhalers

It is possible to design material solutions in compounded form where the fossil fuel-based content is reduced to approximately 50%. Thus, carbon footprint is reduced by modifying these resins with a combination of raw materials such as: non fossil fuel-based resins/additives, natural and synthetic mineral fillers.

Conclusion

Healthcare plastic waste is less significant, but it cannot be ignored. Solutions exist to make your devices ‘greener’: from designing devices using bio-based polymers or chemical foaming agents for light weighting to designing materials where fossil fuel-based content is reduced. With these possibilities you can make inhalation devices more sustainable!