

Can biodegradable polymers live up to the hype?

June 16 2021



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As consumers and corporations alike become more environmentally conscious, the chemical industry is working to find solutions to the plastic waste crisis. One idea is to use biodegradable polymers known as polyhydroxyalkanoates (PHA) as replacements for traditional plastic

packaging and other materials. A feature article in *Chemical & Engineering News*, the weekly newsmagazine of the American Chemical Society, explores the possibilities and pitfalls of PHA.

PHA is not a new human invention; this class of polymers can be found in nature and is used to store cellular energy, writes Senior Editor Alex Tullo. Commercially, it is manufactured through the industrial fermentation of sugars or lipids. As cities around the world ban single-use [plastic](#) products, such as straws and bags, companies are working to commercialize PHA as a viable alternative. The main selling point is rapid biodegradability in a variety of environments. Demand has increased for PHA in recent years, with several companies opening or planning commercial plants in the U.S. and beyond. In addition, major food and beverage brands are planning to switch their packaging to PHA-based materials soon.

Despite its much-touted promise, there's reason to believe PHA might be too good to be true. Several companies have tried and failed to bring it to market in recent years, and PHA is much more expensive than its traditional plastic counterparts. Beyond that, some experts have published findings saying the biodegradability of PHA is overstated, and that the rapid degradation time is based on optimized laboratory conditions rather than real-world ones. However, PHA's boosters say that it's still a better alternative to non-biodegradable plastics, and that the industry may be on the cusp of a breakthrough.

More information: Article link: cen.acs.org/business/biobased-nally-deliver/99/i22

Provided by American Chemical Society

Citation: Can biodegradable polymers live up to the hype? (2021, June 16) retrieved 6 August 2024 from <https://phys.org/news/2021-06-biodegradable-polymers-hype.html>

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