Biodegradable BioPlastics: Assessing environmental risk

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Abstract

Plastic is widely acknowledged as a pressing global issue capable of detrimentally impacting the environment. Biodegradable polymers are often proposed as a solution to conventional plastics due to their properties to degrade over time. The global production of biodegradable polymers has increased over the last decade, and they are widely used in applications where there are substantive pathways to the environment, including agricultural and fishery products, tree shelters, textiles, and non-woven wet wipes. Yet their fate and degradation behaviour within different environments is poorly understood and is influenced by the interplay between the intrinsic properties of the plastic and the characteristics of the surrounding environment. Questions also remain around the individual- and ecosystem-level impacts of biodegradable plastics, and their degradation products. The interdisciplinary "Bio Plastic Risk" project aims to address these knowledge gaps, by establishing the rates of deterioration, pathways and environmental accumulation of plastic (and their breakdown products) in marine and terrestrial environments. Additionally, the direct effects of biodegradable plastic deterioration on marine and terrestrial organisms and indirect consequences on ecological and biogeochemical processes will be examined. The information gained during this project will be used to develop environmental risk assessments and guide the future development and use of biodegradable plastics.

Keywords: biodegradable plastic, impact, degradation, ecological risk

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