

Dr. Miriam Weber, HYDRA Marine Sciences, Germany

Abstract: The potential of biodegradable cellulose fibres in the environment and how to evaluate it

Every year, millions of tons of manmade materials end up in the environment - with drastic consequences. Although the public focus is on littering, there are many other sources of them in the environment. Wear and tear on fibers and textiles, loss from agricultural, aquaculture and fisheries use, abrasion from tires and shoes, paint and outdoor gear, and intentional release of plastics are in addition to the systematic input of plastic waste into soils, rivers, lakes and the ocean from the lack of proper waste management in some markets. While some of these pathways can and must be stopped at the source, others will continue to contribute to the accumulation of plastic in nature. Based on the SAPEA (Scientific Advice for Policy by European Academics) report we also give an overview on the categories defined where biodegradable materials are needed.

Environmental biodegradability must be considered as part of the solution to a less polluted world and must be based on reliable data derived from trustworthy, environmentally relevant testing. Only then can the entire life cycle of a new material be comprehensively assessed, its sustainability measured and compared with conventional materials in an unbiased manner. We explain a multi-tier test scheme of reliable and environmentally relevant methods that fills this gap. Results include the evidence of biodegradability, the assessment of biodegradation rates in relevant conditions and environmental impact. The data can then be used for certification processes and Life Cycle (Impact) Assessments or Environmental Footprints and thus to evaluate any manmade material or product. At a conceptual level, we explain the most important aspects to consider when looking for a material that guarantees the required functionality and has as little impact on the environment as possible.

Presenter

Dr. Miriam Weber is a marine biologist and director of HYDRA Marine Sciences GmbH, Germany. For the last 15 years she has been leading research on the biodegradation of plastic in the open environment with first focusing on the marine ecosystem, meanwhile also tackling freshwater and soil. Together with various partners from the EU, and in projects with public administrations, academia, private institutions, NGOs and industry her team has been developing and conducting tests in the field, in mesocosms and in the laboratory. Dr. Weber has also been contributing to the introduction of several ISO standards on this matter and the SAPEA (Scientific Advice for Policy by European Academics) evidence review report on 'Biodegradability of Plastic in the Open Environment'.