

European Bioplastics debunks scientifically questionable study on compostable plastics

Brussels, 05 October 2023 – European Bioplastics (EUBP) reacts to the publication of a study by Wang et al. claiming that compostable plastics and recycled plastics are more toxic than conventional plastic.

[A study led by the Spanish Institute of Environmental Assessment and Water Research and the Institute of Agrochemistry and Food Technology \(IATA-CSIC\)](#), and published in the *Journal of Hazardous Materials*, claims to have analysed the toxicity of compostable plastic bags, conventional plastic bags, and other recycled plastic bags in zebrafish cells. They explain that the experiment consisted of extracting the bags to analyse the toxic compounds that could be released into the environment. The toxicity of these compounds was evaluated in three different situations, according to them: *“directly, from the bag samples; after a simulation of aging with ultraviolet rays, and through the tiny fragments of the bags that remained after being converted into compost. Finally, the fertilizer resulting from the composting process of the bags was analyzed”*.

The authors state that recycled and compostable plastics are highly toxic, but the method used in the study is a preliminary, not validated testing scheme, and the arguments made in the press release are misleading.

It is important to highlight that **compostable plastics and recycled or virgin conventional plastics are not classified as dangerous substances under EU Regulation (EC) No 1272/2008**. Moreover, compostable plastics must pass ecotoxicity tests to be certified EN 13432 industrially compostable to ensure that there is no negative impact on soil.

Based on peer-review from our scientific experts, here is why:

The authors of the study made a questionable choice by using methanol to extract substances from plastic. The decision to use methanol is completely arbitrary on their end, and the paper provides no rationale for doing so. Further, methanol itself is classified as a toxic liquid. What is also lacking in the report is the proof that methanol extraction does not modify the chemical structure of the analysed sample. The use of methanol therefore introduces a bias into the study, and the authors failed to provide

enough information about the extraction procedure to rule out the possibility that it could have created artifacts. Extraction with methanol as a solvent does not have the same effect on all polymers meaning that results cannot be comparable for different types of polymers. Additionally, the results of toxicity tests on methanolic extracts from plastic cannot be directly applied to plastic itself. In fact, methanol extracts chemical substances from the product, and the highly concentrated extract is assessed. This is not at all comparable to a real-life chemical leakage in the environment or migration in food.

The additives found by extraction in the study are not classified as toxic according to the regulation on Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation, No. 1278/2008), while the rest of the non-identified additives are interpreted based on speculations.

It is extremely alarming that the press release accompanying this study is conveying information in a very sensational way, diverting the readers' attention from evaluating the validity of the study itself and the scientific method employed. We have seen this phenomenon reoccur more often recently, and not only is it harming the bioplastics industry, but all industries and the scientific community itself. One needs to remember that standards are ensuring at a legal and health level that the products are assessed and safe to use, according to their regulation requirements.

Overall, the claims asserted in the press release that recycled and compostable plastics are more toxic than virgin plastics are not supported by any scientific evidence. Therefore, the study, including the test methods, and the sample taking procedures, should be completely reassessed on their scientific correctness. EUBP would be happy to support the scientists with detailed comments.

About European Bioplastics

European Bioplastics (EUBP) is the European association representing the interests of the bioplastics industry along the entire value chain. Its members produce, refine and distribute bioplastics i.e., plastics that are biobased, biodegradable, or both. More information is available at www.european-bioplastics.org

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