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Microplastics and earthworms in soils: A case study on translocation, toxicity and fate

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Microplastics are not only found in marine and lacustrine environments but also in soils. Microplastics enter natural soil environments from legal or illegal waste deposition. In arable soils, microplastics often stem from the decomposition of plastic sheeting. The accumulation of (micro-)plastic from garbage bags in which biological waste is often disposed, is also a significant problem for the recycling and composting of organic waste. Commercially available compostable bags are advertised as degradable. Thus, these compostable bags ought to accumulate less in soils than non-compostable bags. We present a pilot study to determine the preference of earthworms (*Lumbricus terrestris* and *Eisenia hortensis*) for taking up and translocating different types of microplastic in soils. Our initial findings from the soil column experiment suggest that the earthworms show a strong tendency for the uptake of microplastic. We also observed direct and indirect transport of microplastic by earthworms from the surface to deeper parts of the soil columns.