the plastic polymers in addition to particle size. Since PVC appears to be more hazardous than PS, we therefore suggest continuing to explore the role of the polymer type in the onset of NP hazard.

3.22.P-Tu368 Impact of Weathered and Virgin Polyethylene Terephthalate Nanoplastics on Growth Dynamics and the Production of Extracellular Polymeric Substance (EPS) by Marine Algae

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In context of the ever-increasing plastic waste accumulation in the marine environment, it is important to understand the interaction between microalgae and nanoplastics (NP), and the role of extracellular polymeric substances (EPS) within this. EPS production is a known algal stress response, and its adhesive properties may induce aggregation of both algae themselves and particles, which in turn may affect ecological and hydrodynamic processes such as trophic transfer of nanoplastics or the vertical transport. Here, the impact of fragmented, polydisperse virgin polyethylene terephthalate (PET, $D_{average}$ = 1400 nm) and weathered polyethylene terephthalate (PET, $D_{average}$ = 680 nm) on algae growth and the production of EPS was studied by exposing the marine microalgae *Rhodomonas salina* to low NP concentrations (10, 100 and 1000 and 10000 NPs ml^{-1}) for 12 days. A positive control with kaolin was included to detangle particle effects from plastic effects. Baranyi parametric growth-models were fit to the data to analyze growth-dynamics. Exposure to weathered PET, virgin PET and kaolin resulted in an initial increased growth rate, followed by significant decreases in algae population density. At low concentrations, the effect was independent of the particles' nature (natural or anthropogenic) or age (virgin or weathered). At high exposure concentrations, the plastic particles caused significantly higher decreases in population density, and the effects were amplified as the particles weathered. The effects on growth of weathered PET were combined with significant increases in cellular EPS production. This suggests that algae exhibit an increase in EPS-production as a stress response. This raises questions about the toxicity mechanisms of NPs in low concentrations, and hints towards the role of EPS production as a defence mechanism, which changes the energy budgets, with less energy allocated to growth. This study underscored the intricate interactions between particle types, age and concentrations, and their distinct impacts on algae density, growth inhibition and EPS production.

3.22.P-Tu369 Impact of secondary biodegradable nanoplastics on the freshwater microalga Chlamydomonas reinhardtii

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During the last years, there has been a transition from conventional plastics to biodegradable alternatives. Although many works have been published about the ecotoxicological effects of conventional and primary microplastics and nanoplastics (NPs), limited knowledge exists regarding the impacts of biodegradable plastics, and the secondary NPs formed by their fragmentation. This study focuses on elucidating the toxicological effects of secondary NPs obtained from PBAT (Polybutylene adipate co-terephthalate), a biodegradable plastic commonly used in agriculture mulching, on the green microalga *Chlamydomonas reinhardtii*, a key model organism in freshwater ecosystems due to its role as a primary producer. Secondary PBAT nanoplastics (PBAT-NPs) were obtained by mechanical breakdown and photooxidation of pristine PBAT microbeads. For the physicochemical characterization of secondary PBAT-NPs, hydrodynamic size, surface charge, morphological identification, chemical identification, and final concentration were measured and conducted in ultra-pure water using dynamic light scattering (DLS), electrophoretic light scattering (ELS), scanning electron microscope (SEM-EDX), Fourier transform infrared spectroscopy (FTIR) and dry weight, respectively. To investigate the effects of the secondary PBAT-NPs, *C. reinhardtii* was exposed to different concentrations of secondary PBAT-NPs and the following parameters were assessed: cellular growth, photosynthetic pigments contents and fluorescence measurements, photosynthesis, ROS generation, membrane potential, intracellular pH, and metabolic activity measurements. Results showed that secondary PBAT-NPs can heteroaggregate with *C. reinhardtii* and decrease the microalga photosynthesis, trigger ROS overproduction, and cause membrane depolarization. Transcriptomic analyses by RNA-Seq will also be performed. Taken together, this study aims to unravel the underlying mechanisms governing the potential biological impact of secondary biodegradable NPs, evaluating the risk of this novel alternative to conventional plastics in freshwater ecosystems.

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3.22.P-Tu370 Influence of Benzo[a]pyrene on the Toxicity of Polystyrene Nanoplastics to Marine Microalgae Isochrysis galbana

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