range (NR) was observed. A significant positive correlation between microplastics occurrence and increasing diversity of basal sources used (Carbon range) was found. Planktivorous species such as sardine and bogue show the highest occurrence of MPs and the greater diversity of basal resources used. Moreover, a significant negative correlation between the number of ingested items per individual and the trophic level was observed. This relationship could be explained by the different feeding habits of the 8 analyzed species; at lower trophic levels we have planktivorous/pelagic species (anchovies, sardines, bogue) while the benthic predator species have higher trophic levels (i.e. red mullet, hake). This also agrees with the wider trophic niche (SEAc) exploited by benthic species. Overall, an influence of trophic niche descriptors on the occurrence of microplastics ingestion was not observed, but it seems that at the increase of the diversity of basal carbon sources used, the occurrence of plastic ingestion raises significantly.

3.10.P-We106 The Combined Presence of Microplastics and Hg Affects Hg-Resistant Fungal-Community Activities?

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Estuaries are heavily impacted by anthropogenic contamination, serving as reservoirs of various pollutants such as heavy metals (e.g., mercury (Hg) and microplastics (MP, Ø < 5mm)). These pollutants can affect water quality and cause toxic effects in aquatic organisms. Mercury, a trace heavy metal, is characterized as neurotoxic, persistent, and bio-accumulative in the food chain. In systems contaminated by Hg, microorganisms are responsible for reducing Hg, contributing to its natural detoxification. However, the effects of the presence of MP in this process are still unknown. The growing concern of micro-plastics is not only the chemical additives in their constitution that can be released, but also their ability to act as vectors of other contaminants, namely Hg, and microbial community biofilm, the so-called "plastisphere". Therefore, the following questions arise A) Does the presence of microplastics and Hg affect Hg-resistant fungal-community and activities? To answer this above-mentioned question, the fungal community was isolated from a Hg-contaminated area of the Tagus estuary (Barreiro), and the most resistant strains were selected to assess the effect of the presence of polystyrene MP (PS) (40 mg/L) on fungi activity in a Hg-containing medium. After 1, 5 days, and 10 days of incubation of Hg-resistant strains with PS MPs and Hg (1ppm), the following factors were analyzed: A) Hg detoxification capacity and B) acute toxicity associated with the leached (Microtox bioassay). Furthermore, the isolates were identified through the amplification ITS. The results showed that: (i) fungal strains isolated from the Tagus Estuary exhibit high Hg-resistance (MIC range 37.5 – 50.0 ppm), (ii) Hg concentration in the medium were reduced via fungal activity (65-93% of the control), (iV) however, the presence of MPs increased the toxicity associated to the leached. Thus, we can conclude that MPs interfere with fungal activity in a Hg-contaminated aquatic system by increasing the toxicity associated.

3.10.P-We107 Individual- to Population-Level Effects of Smoked and Non-Smoked Cigarette Filters in the Deposit Feeding Polychaete Capitella teleta

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Cigarette filters (CFs) are the most dominant item in litter clean op surveys. In the environment CFs deteriorate into smaller fibres and leach an array of chemicals trapped in the filter. Thus, CFs may pose an environmental risk due to the release of plastic fibres and associated chemicals. It is recognised that CFs may affect both pelagic and benthic organisms, but little information is available on their long-term effects at higher levels of biological organization. The aim of the present study was to assess the effects of smoked CFs (SCFs) and non-smoked CFs (NCFs) on individual life-history traits and extrapolate these to possible effects at higher biological organization (*i.e*., populations). The benthic polychaete *Capitella teleta* was exposed to sediment-spiked granule of SCFs and NCFs at an environmentally realistic concentration (0.1 mg fibre g^{-1} dw sed) and a 100-fold higher (10 mg fibre g^{-1} dw sed) concentration. The experiment was divided in a juvenile and an adult exposure phase. In the juvenile exposure 10 larvae (5 days old) was exposed and monitored weekly for survival and time to sexual maturity. Once worms reached sexual maturity a male and a female were paired (adult experiment) and monitored every other day. The endpoints included somatic growth as well as survival, time to first reproduction, time between reproductive events and reproductive output. Overall, juvenile survival decreased with time in all treatments. After three weeks of exposure juvenile survival was significantly lower for worms exposed to SCF at high concentration compared with the control. Similarly, the presence of SCFs in the sediment affected the number of surviving worms that reached sexual maturity within three weeks of exposure when comparing with control. High concentration of SCFs significantly affected number of worms reaching sexual maturity, whereas a borderline significant effect was detected at low concentration. Overall, none of the tested endpoints in the current experiment was significantly affected by the presence of NCFs in the sediment. The initial results of the current experiment indicate that chemicals associated with the smoked filters are causing the effects rather than the cellulose acetate fibers from the filters in itself. Ultimately, measured life-history traits are to be incorporated in a simple demographic model to project changes in population growth rate in order to assess potential effects of exposure to CFs on population level.

3.10.P-We108 The Effect of Leachates From a Ultraviolet Weathered Bio-Based Composite on Marine Diatom Growth

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Polymers made from a natural-sourced feedstock, like polylactic acid (PLA), known as bio-based polymers, are seen as more

sustainable alternatives to petroleum-based polymers, with lower carbon and environmental footprint. However, concerns are emerging on whether these bio-based polymers have a lower ecological impact than petroleum-based polymers. In the marine environment, plastic additives can be released, i.e. can leach, from plastic to the surrounding seawater and organism. Studies have demonstrated the negative effects of leachates from several petroleum-based polymers on marine organisms, however, to date, few studies have assessed the potential effect of leachates from bio-based polymers. As part of the Interreg 2 Seas Mers Zeeën project SeaBioComp (seabiocomp.eu), we aim to assess the effect of leachates from a newly developed bio-based composite (i.e. bio-based polymers integrated with synthetic or natural fibres) on the growth of a marine diatom; and explore whether the effect is enhanced or diminished by UV radiation. To do so, we exposed the marine diatom *Phaeodactylum tricornutum* to a dilution series of leachates from pristine and weathered self-reinforced (SR-) PLA, following the ISO 10253:2016 protocol. To obtain weathered plastic, SR-PLA sheets flakes were subjected UV radiation, simulating up to 18 months of natural solar exposure. Our results indicate that neither leachates from pristine SR-PLA nor from UV-weathered SR-PLA had an effect on the growth of *P. tricornutum*, and UV radiation had no effect on the toxicity of SR-PLA leachates. In addition, we determined the EC_{50} (i.e. half maximal effective concentration) to algal growth of two potential leached compounds, which were 1.86 ± 0.06 mg/L for dodecan-1-ol and 341 ± 30 mg/L for di-lactide. We anticipate that our results will contribute to assessing the ecological impacts of bio-based polymers and composites which may be more sustainable alternatives to petroleum-based polymers.

3.10.P-We109 Mapping of Occurrence of Microplastics in the Sediments of a Stormwater Pond

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In the modern world, dependency on plastic polymers for extensive commercial, industrial, medicinal and municipal applications is inevitable. Stormwater, wastewater and combined sewer overflows are commonly considered significant potential sources of Microplastics (MPs), discharging to waterbodies in urban areas. In this study we investigate the spatial distribution of MPs in the sediments of an inland stormwater pond located in the city of Aarhus, Denmark. To examine if MPs are evenly distributed in terms of location, size and polymer composition and the driving factors on these spatial patterns, thirteen sediment samples were collected. Briefly, samples underwent physical and chemical treatments including preoxidation, Sodium Dodecyl Sulfate (SDS) treatment, enzymatic treatment and density separation. Samples were sieved through a 500 µm mesh. Microplastics below 500 µm were identified and quantified by microscopy coupled to a Fourier Transform Infrared microscope (µFTIR with Focal Plane Array). Considering both number and mass, the average MP concentration was 44'396.86 item kg^{-1} and 11,839.98 µg Kg^{-1}. There was no systematic variation of neither number nor mass concentration in the pond. Although samples were taken from different locations, small-sized low dense Polypropylene particles were the most abundant MP type in the majority of the sampled sites. Therefore, it can be concluded that deposition of MPs in the pond's sediments did not follow any pattern corresponding to their size and type. In the other word, MP distribution in the sediments was not size and type (density) selective. The fact that lighter-than-water-polymers were the most abundant types, and that there was no systematic relationship between position in the pond, concentration, and composition of MPs indicates that the transport mechanism of MPs from the water to the sediments was not simple sedimentation, but that the deposition was governed by some other mechanism. This study contributes to gain knowledge of the processes and mechanism which drives transport of mp in shallow water systems.

3.10.P-We323 Microplastics in the Rhizosphere: Consequences on Root Exudation and Microbial Communities

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Important agricultural crops are able to establish symbiosis with the microbial community in agricultural soils, forming mutually beneficial exchanges of photosynthates for nutrients that are otherwise inaccessible to the plant. These root-soil-microbial interactions are honed over millions of years of evolution and predicated on naturally occurring soil properties which can be altered by microplastics. Plastic particles from biosolids added to soil as a nutrient source are potentially ecotoxic and may interfere with normal root functiong through several mechanisms, including deleteriously affect soil properties, blocking signaling molecules, absorb soil organic matter important for roots and soil microbes, and may release toxins that exert a selective pressure against the microbial community. To investigate biosolid microplastic effects on the root-soil-microbial interactions of three crops (corn, soybean, alfalfa) ranging in their association with root-symbionts (fungal partnership only, fungal partnership with N fixing bacteria, alternative fungal partnership and N fixing bacteria) crops will be grown in agricultural soils amended with artificially created microplastics that reflect reported biosolid microplastic properties (i.e. size, quantity, type, surface morphology), yet are free of other potentially toxic substances that are variably found in biosolids and could be confounding variables. The presence of microplastics in the rhizosphere is envisioned to disrupt root-soil-microbial interactions will can be quantified via rot exudate analysis of rhizosphere soil and soil microbial community functional profiling. As roots alter the physicochemical properties of the adjacent soil through root exudation to increase nutrient availability, stabilize of toxic metals, and protect against pathogens using anti-microbials [5] it is plausible microplasics may induce similar stresses and thus alter the magnitude and composition of low-weight molecules transferring from roots into the soil. Exudation can suppress microbial metabolism pathways and thereby alter their utilization pattern of soil carbon [6] quantifiable by the MicroResp method which monitors the evolution of carbon dioxide from microbial respiration in soil amended with various C sources.

3.10 Microplastics in the environment: Behaviour, transport, fate, risks, and alternatives to conventional plastics (Part V)