

Supplements

Microplastics reduce short-term effects of environmental contaminants.

Part II: Polyethylene particles decrease the effect of polycyclic aromatic hydrocarbons on microorganisms

Julia Kleinteich, Sven Seidensticker, Nikolaj Marggrander, Christiane Zarfl

Center for Applied Geoscience, Eberhard Karls Universität Tübingen, D-72074 Tübingen,
Germany

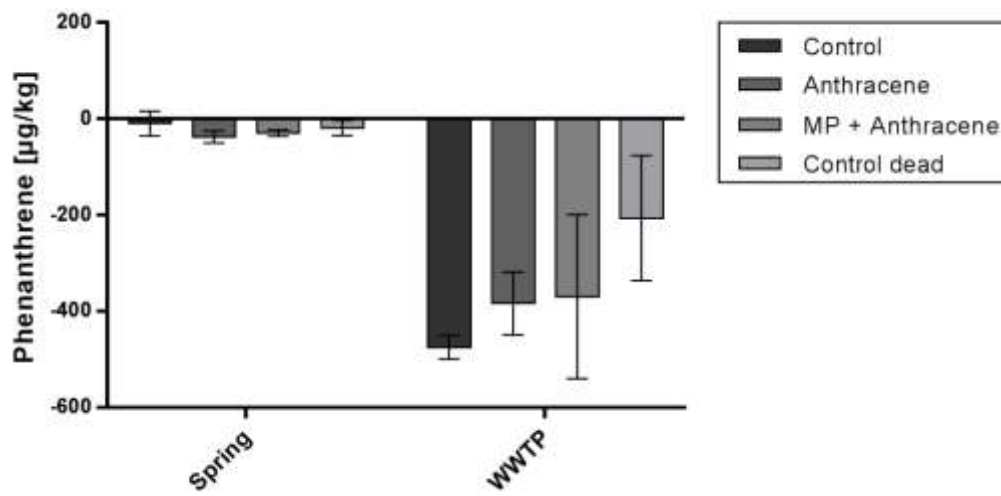


Figure S1: Degradation of phenanthrene measured in the sediment after two weeks of incubation with spiked anthracene and/or microplastic (MP) particles, minus the ambient background concentration of phenanthrene ($109 \mu\text{g}/\text{kg}$ at the spring and $1160 \mu\text{g}/\text{kg}$ at the wastewater treatment plant - WWTP).

Table S1: ANOSIM R Values of the treatment with microplastic (MP) of sediment collected downstream of a wastewater treatment plant.

	<i>Control</i>	<i>MP low</i>	<i>MP high</i>
<i>Control</i>		-0.15	0
<i>MP</i>	-0.15		-0.22
<i>MP high</i>	0	-0.22	

Table S2: ANOSIM R Values of the treatment with microplastic (MP) of sediment collected at the river spring.

	<i>Control</i>	<i>MP low</i>	<i>MP high</i>
<i>Control</i>		0.41	0.93
<i>MP</i>	0.41		0.20
<i>MP high</i>	0.93	0.20	

Table S3: ANOSIM R Values of the treatment with phenanthrene (Phen) and microplastic (MP) of sediment collected downstream of a wastewater treatment plant.

	<i>Control</i>	<i>MP</i>	<i>MP+Phen</i>	<i>Phen</i>
<i>Control</i>		0.30	0.57	0.74
<i>MP</i>	0.30		0.09	0.69
<i>MP+Phen</i>	0.57	0.09		0.85
<i>Phen</i>	0.74	0.69	0.85	

Table S4: ANOSIM R Values of the treatment with phenanthrene (Phen) and microplastic (MP) of sediment collected at the river spring.

	<i>Control</i>	<i>MP</i>	<i>MP+Phen</i>	<i>Phen</i>
<i>Control</i>		0.28	0.59	0.26
<i>MP</i>	0.28		0.37	0.70
<i>MP+Phen</i>	0.59	0.37		0.44
<i>Phen</i>	0.26	0.70	0.44	

Table S5: ANOSIM R Values of the treatment with anthracene (Anthr) and microplastic (MP) of sediment collected downstream of a WWTP.

	<i>Control</i>	<i>Solv. control</i>	<i>MP</i>	<i>MP+Anthr</i>	<i>Anthr</i>
<i>Control</i>		0.0	0.09	0.11	0.0
<i>Solv. control</i>	0.0		0.13	-0.37	-0.04
<i>MP</i>	0.09	0.13		0.17	-0.22
<i>MP+Anthr</i>	0.11	-0.37	0.17		0.0
<i>Anthr</i>	0.0	-0.04	-0.22	0.0	

Table S6: ANOSIM R Values of the treatment with anthracene (Anthr) and microplastic (MP) of sediment collected at the river spring.

	<i>Control</i>	<i>Solv. control</i>	<i>MP</i>	<i>MP+Anthr</i>	<i>Anthr</i>
<i>Control</i>		0.07	-0.19	-0.15	0.31
<i>Solv. control</i>	0.07		-0.22	0.30	0.0
<i>MP</i>	-0.19	-0.22		0.33	0.11
<i>MP+Anthr</i>	-0.15	0.30	0.33		0.33
<i>Anthr</i>	0.31	0.0	0.11	0.33	

Table S7: Result of the Bonferroni multiple comparison post-test on the one-way ANOVA for differences between treatments in anthracene concentrations after two weeks of incubation of spring sediment.

<i>Treatment</i>	<i>Mean Diff</i>	<i>95.00% CI of diff.</i>	<i>Significant?</i>	<i>Summary</i>	<i>Adjusted P Value</i>
<i>Control vs. Anthracene</i>	-6.408	-11.31 to -1.504	Yes	*	0.0113
<i>Control vs. MP + Anthracene</i>	-14.87	-19.77 to -9.964	Yes	****	<0.0001
<i>Control vs. Control dead</i>	-34.93	-39.83 to -30.02	Yes	****	<0.0001
<i>Anthracene vs. MP + Anthracene</i>	-8.46	-13.36 to -3.556	Yes	**	0.0019
<i>Anthracene vs. Control dead</i>	-28.52	-33.42 to -23.61	Yes	****	<0.0001
<i>MP + Anthracene vs. Control dead</i>	-20.06	-24.96 to -15.15	Yes	****	<0.0001