

SUPPLEMENTARY INFORMATION

Toxic effects of leachates from plastic pearl-farming gear on embryolarval development in the pearl oyster *Pinctada margaritifera*

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This supplementary information contains:

- Page 2: **Figure S1.** Polymer identification of plastic pearl-farming gear by Fourier-transform infrared spectroscopy (FTIR).
- Page 3: **Figure S2.** Distribution of PAHs in plastic samples.
- Page 4: **Table S1.** Relative abundance of PAHs in plastic samples according to chemical analyses performed by TD-GC/MS and SLE-GC/MS methods (raw data).
- Page 5: **Figure S3.** Additive concentrations in plastic samples.
- Page 6: **Table S2.** Additive concentrations in plastic samples according to chemical analyses performed by TD-GC/MS method (raw data).
- Page 7: **Table S3.** Chemical compounds identified and quantified in 24 h and 120 h leachates from new and aged plastic pearl-farming gear by SBSE-TD-GC/MS (raw data).
- Page 8: **Table S4.** Mortality after 24 h and 48 h exposure to leachates from new and aged plastic gear.
- Page 9: **Table S5.** Results of Tukey's post-hoc test performed on mortality data (24 h and 48 h) square root transformed.
- Page 10: **Table S6.** Percentage of embryonic development after 24 h exposure to leachates from new and aged plastic gear.
- Table S7.** Results of Tukey's post-hoc test performed on embryo development data square root transformed.
- Page 11: **Table S8.** Larval stages after 24 h exposure to leachates from new and aged plastic gear.
- Page 12-13: **Table S9.** Results of Tukey's post-hoc test performed on larval stages (24 h) square root transformed.
- Page 14: **Table S10.** Larval stages after 48 h exposure to leachates from new and aged plastic gear.
- Page 15-16: **Table S11.** Results of Tukey's post-hoc test performed on larval stages (48 h) square root transformed.

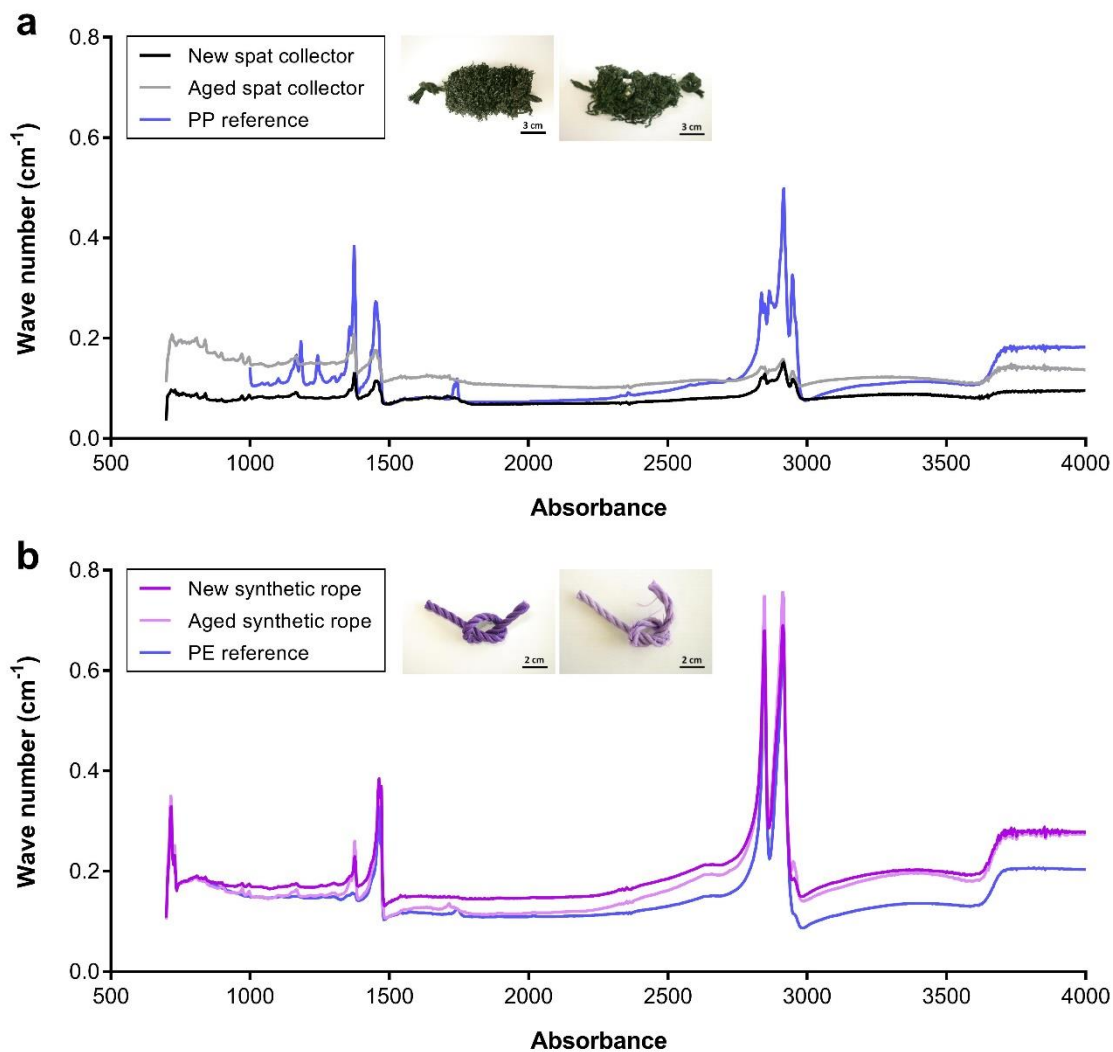


Figure S1. Polymer identification of plastic pearl-farming gear by Fourier-transform infrared spectroscopy (FTIR). Polypropylene (PP) identification from new and aged spat collectors (a), and polyethylene (PE) identification from new and aged synthetic rope lines (b).

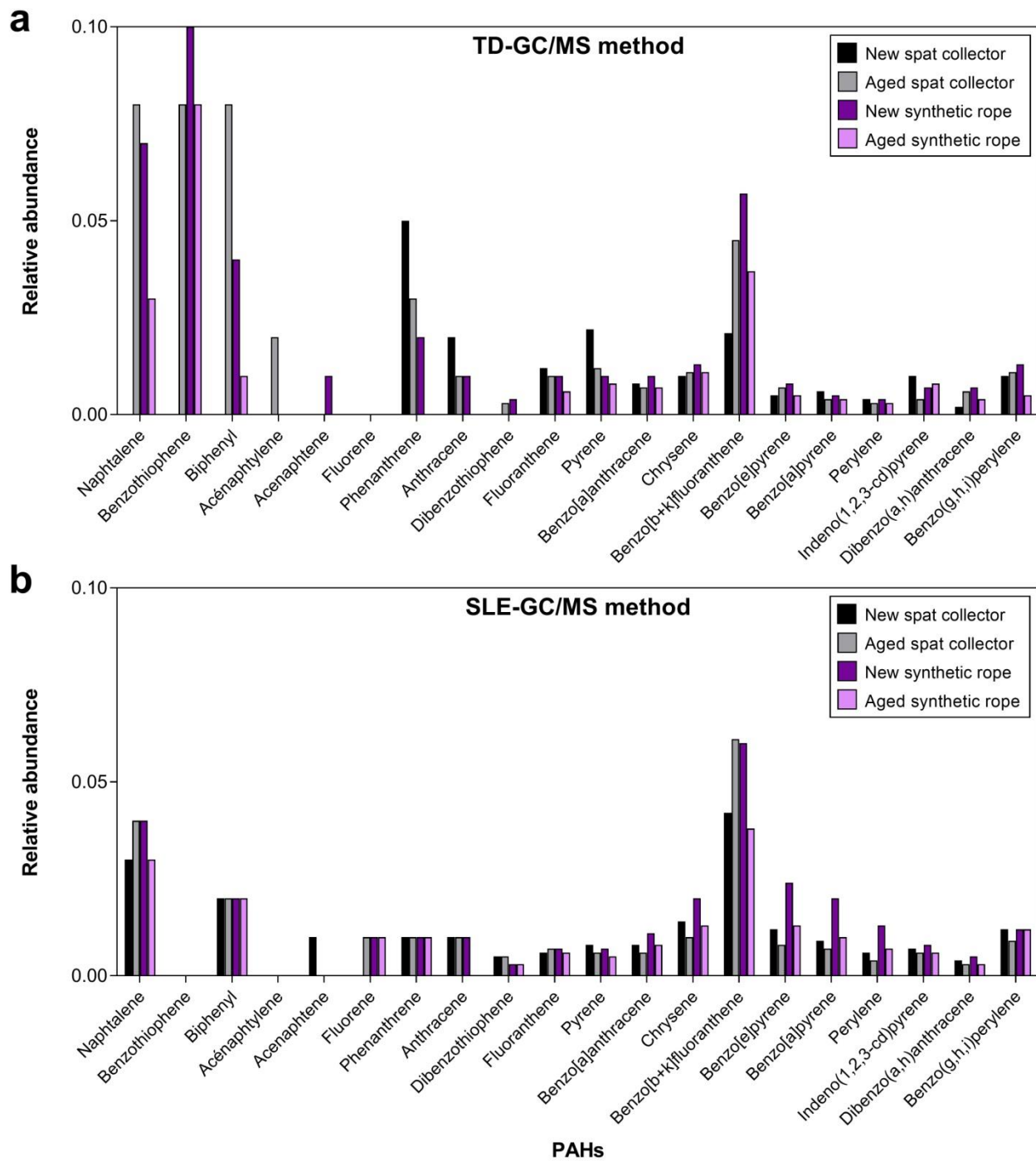


Figure S2. Distribution of PAHs in plastic samples. Chemical analyses performed by TD-DC/MS (a) and SLE-GC/MS (b) method.

Table S1. Relative abundance of PAHs in plastic samples according to chemical analyses performed by TD-GC/MS and SLE-GC/MS methods.

Relative abundance		TD-GC/MS method				SLE - GC/MS method			
PAHs	Ion	New spat collector	Aged spat collector	New synthetic rope	Aged synthetic rope	New spat collector	Aged spat collector	New synthetic rope	Aged synthetic rope
Naphtalene	128	0.00	0.08	0.07	0.03	0.03	0.04	0.04	0.03
Benzothiophene	134	0.00	0.08	0.10	0.08	0.00	0.00	0.00	0.00
Biphenyl	154	0.00	0.08	0.04	0.01	0.02	0.02	0.02	0.02
Acenaphthylene	152	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Acenaphtene	154	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Fluorene	166	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Phenanthrene	178	0.05	0.03	0.02	0.00	0.01	0.01	0.01	0.01
Anthracene	178	0.02	0.01	0.01	0.00	0.01	0.01	0.01	0.00
Dibenzothiophene	184	0.000	0.003	0.004	0.000	0.005	0.005	0.003	0.003
Fluoranthene	202	0.012	0.010	0.010	0.006	0.006	0.007	0.007	0.006
Pyrene	202	0.022	0.012	0.010	0.008	0.008	0.006	0.007	0.005
Benzo[a]anthracene	228	0.008	0.007	0.010	0.007	0.008	0.006	0.011	0.008
Chrysene	228	0.010	0.011	0.013	0.011	0.014	0.010	0.020	0.013
Benzo[b+k]fluoranthene	252	0.021	0.045	0.057	0.037	0.042	0.061	0.060	0.038
Benzo[e]pyrene	252	0.005	0.007	0.008	0.005	0.012	0.008	0.024	0.013
Benzo[a]pyrene	252	0.006	0.004	0.005	0.004	0.009	0.007	0.020	0.010
Perylene	252	0.004	0.003	0.004	0.003	0.006	0.004	0.013	0.007
Indeno(1,2,3-cd)pyrene	276	0.010	0.004	0.007	0.008	0.007	0.006	0.008	0.006
Dibenzo(a,h)anthracene	278	0.002	0.006	0.007	0.004	0.004	0.003	0.005	0.003
Benzo(g,h,i)perylene	276	0.010	0.011	0.013	0.005	0.012	0.009	0.012	0.012
∑ PAHs		0.18	0.17	0.18	0.10	0.15	0.15	0.21	0.14

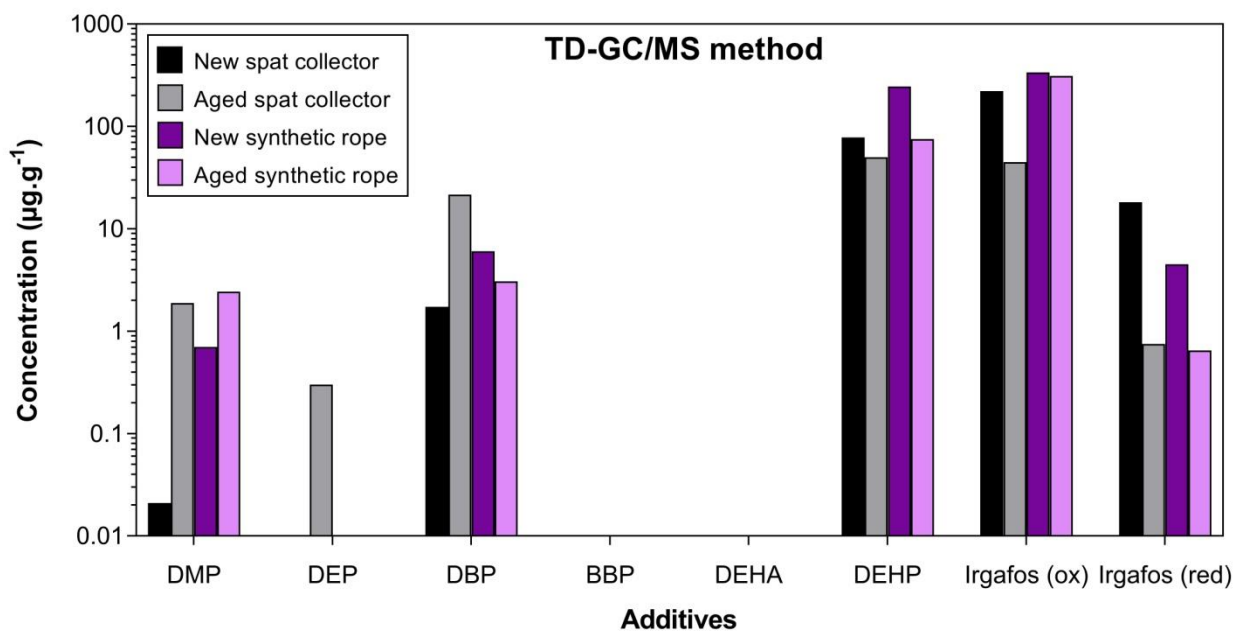


Figure S3. Additive concentrations in plastic samples (after blank correction). Chemical analyses performed by TD-DC/MS method. Phthalate additives: DMP (dimethyl phthalate), DEP (diethyl phthalate), DBP (di-n-butyl phthalate), BBP (butyl benzyl phthalate), DEHA (diethylhexyl adipate) and DEHP (di(2-ethylhexyl) phthalate). Antioxidant additives: Irgafos 168[®] oxidized (ox) and reduced (red).

Table S2. Additive concentrations in plastic samples according to chemical analyses performed by TD-GC/MS method (raw data).

Concentration ($\mu\text{g}\cdot\text{g}^{-1}$)		TD-GC/MS method				
Additives	Ion	Blank	New spat collector	Aged spat collector	New synthetic rope	Aged synthetic rope
DMP	163	0.04	0.25	1.92	0.74	2.48
DEP	177	0.67	0.01	0.97	0.27	0.10
DBP	149	1.20	2.93	22.75	7.24	4.26
DEHA	129	8.08	7.59	6.92	7.91	5.63
DEHP	149	20.13	98.31	70.26	265.50	95.51
Irgafos 168 [®] oxidized	316	1.37	222.57	46.18	337.88	313.20
Irgafos 168 [®] reduced	441	0.04	18.25	0.79	4.53	0.69
Σ Additives		30.1	109.1	102.8	281.7	108.0

DMP: dimethyl phthalate, DEP: diethyl phthalate, DBP: di-n-butyl phthalate, BBP: butyl benzyl phthalate, DEHA: diethylhexyl adipate and DEHP: di(2-ethylhexyl) phthalate.

Table S3. Chemical compounds identified and quantified in 24 h and 120 h leachates from new and aged plastic pearl-farming gear by SBSE-TD-GC/MS (raw data).

DL (ng.L ⁻¹)	QL (ng.L ⁻¹)	Compounds*	Blank (ng.L ⁻¹)	Control (ng.L ⁻¹)	New leachate		Aged leachate	
					24 h (ng.L ⁻¹)	120 h (ng.L ⁻¹)	24 h (ng.L ⁻¹)	120 h (ng.L ⁻¹)
0.30	1.00	Fluorene	<DL	1.63	<QL	<QL	<DL	<DL
0.30	1.00	Phenanthrene	<DL	2.12	1.44	2.20	1.75	2.19
0.30	1.00	Fluoranthene	<QL	2.63	9.40	2.48	3.69	4.39
0.15	0.50	Chrysene	<DL	<DL	<DL	<DL	<QL	0.77
0.15	0.50	Benzo[a]pyrene	<QL	<DL	<DL	<DL	<DL	0.54
		∑ PAHs	0.00	6.39	10.85	4.68	5.45	7.90
0.15	0.50	PCB 28	<DL	<DL	2.25	<DL	<DL	<DL
		∑ PCBs	0.00	0.00	2.25	0.00	0.00	0.00
0.15	0.50	α-HCH	<DL	0.95	<DL	<DL	<DL	2.36
0.15	0.50	β-HCH	<DL	2.15	<QL	<QL	<DL	<DL
0.15	0.50	γ-HCH	<DL	1.63	1.38	1.66	2.17	29.70
0.15	0.50	δ-HCH	<DL	1.70	<DL	<DL	<DL	<DL
0.15	0.50	Acetochlore	<DL	2.41	1.48	2.14	<QL	<QL
0.15	0.50	Methylparathion	<DL	1.79	2.78	<DL	<DL	1.40
0.15	0.50	Alachlore	<DL	1.72	<DL	<DL	<DL	<DL
0.15	0.50	Chlorpyrifos	<DL	<QL	1.54	1.86	2.68	4.71
0.15	0.50	Chlorfenvinphos	<DL	6.53	<DL	<DL	<DL	<DL
0.03	0.10	α-Endosulfan	<QL	0.16	0.37	0.36	0.30	0.81
0.15	0.50	Dieldrin	<DL	0.61	<QL	<QL	2.16	1.66
0.30	1.00	Endosulfan sulfate	<DL	2.04	<DL	<DL	<QL	<DL
		∑ Pesticides	0.00	21.69	7.55	6.02	7.31	40.64
0.45	1.50	BDE 47	<QL	2.45	<QL	<QL	<QL	<QL
		∑ PBDEs	0.00	2.45	0.00	0.00	0.00	0.00
15.00	50.00	DMP	<DL	1504.79	4939.96	7457.86	135.78	<QL
15.00	50.00	DEP	<QL	339.34	1740.96	1619.14	403.17	429.75
15.00	50.00	BBP	<QL	470.06	<QL	<DL	<DL	<DL
		∑ Phthalates	0.00	2314.19	6680.92	9077.00	538.95	429.75

DL: detection limit, QL: quantification limit, PAHs: polycyclic aromatic hydrocarbons, PCBs: polychlorinated biphenyls, HCH: Hexachlorocyclohexane, PBDEs: polybrominated diphenyl ethers, DMP: dimethyl phthalate, DEP: diethyl phthalate, BBP: butyl benzyl phthalate.

* Compounds annotated "< DL" and/or "< QL" for all screened treatments are not included in the table.

Table S4. Mortality after 24 h and 48 h exposure to leachates from new and aged plastic gear.

Leachate concentration (g.L ⁻¹)	Control (%)	New 24 h leachate (%)	Aged 24 h leachate (%)	New 120 h leachate (%)	Aged 120 h leachate (%)
<i>24 h</i>					
0	18.3 ± 11.1				
0.1		26.1 ± 17.7	11.5 ± 11.8	39.6 ± 12.0	8.6 ± 6.3
1		21.5 ± 14.5	8.7 ± 9.1	32.8 ± 16.07	12.0 ± 15.9
10		26.8 ± 16.9	10.5 ± 8.6	19.2 ± 5.8	3.6 ± 3.4
100		100.0 ± 0.0	100.0 ± 0.0	100.0 ± 0.0	90.1 ± 3.0
<i>48 h</i>					
0	10.0 ± 13.8				
0.1		26.3 ± 13.3	17.5 ± 25.0	85.9 ± 3.0	28.5 ± 23.4
1		44.8 ± 38.3	16.4 ± 15.0	65.7 ± 24.5	20.8 ± 23.5
10		58.8 ± 30.8	12.2 ± 11.4	59.5 ± 19.9	10.5 ± 14.1
100		100.0 ± 0.0	100.0 ± 0.0	100.0 ± 0.0	93.8 ± 4.6

Values resulting from the average of five replicates (mean ± standard deviation).

Table S5. Results of Tukey's post-hoc test performed on mortality data (24 h and 48 h) square root transformed.

g.L ⁻¹	Control				New 24 h leachate				Aged 24 h leachate				New 120 h leachate				Aged 120 h leachate				Group	
	0	0.1	1	10	100	0.1	1	10	100	0.1	1	10	100	0.1	1	10	100	0.1	1	10		100
<i>24 h</i>																						
Control	0																					abc
N-24	0.1	-																				abc
	1	-																				abc
	10	-																				abc
	100	<0.001	<0.001	<0.001	<0.001																	d
A-24	0.1	-	-	-	-	<0.001																ab
	1	-	-	-	-	<0.001																ab
	10	-	-	-	-	<0.001																ab
	100	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001													
N-120	0.1	-	-	-	-	<0.001	0.0221	0.0060	0.0157	<0.001												c
	1	-	-	-	-	<0.001	-	-	-	<0.001												bc
	10	-	-	-	-	<0.001	-	-	-	<0.001												abc
	100	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001									
A-120	0.1	-	-	-	-	<0.001	-	-	-	<0.001	0.0066	-	-	<0.001								ab
	1	-	-	-	-	<0.001	-	-	-	<0.001	0.0286	0.0104	-	<0.001								ab
	10	-	-	-	-	<0.001	-	-	-	<0.001	<0.001	-	-	<0.001								a
	100	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001					
<i>48 h</i>																						
Control	0																					a
N-24	0.1	-																				abc
	1	-																				abcd
	10	0.0064	-	-	-																	bcde
	100	<0.001	<0.001	0.0013	0.0087																	
A-24	0.1	-	-	-	-	<0.001																ab
	1	-	-	-	-	<0.001																ab
	10	-	-	-	-	<0.001																ab
	100	<0.001	<0.001	0.0103	-	-	<0.001	<0.001	<0.001													
N-120	0.1	<0.001	0.0249	-	-	-	<0.001	<0.001	<0.001	-												def
	1	<0.001	-	-	-	-	0.0328	0.0472	0.0191	-												cdef
	10	0.0034	-	-	-	0.0145	-	-	-	-												bcde
	100	<0.001	<0.001	0.0013	0.0087	-	<0.001	<0.001	<0.001	-	-	-	0.0145									
A-120	0.1	-	-	-	-	<0.001	-	-	-	<0.001	0.0165	-	-	<0.001								abc
	1	-	-	-	-	<0.001	-	-	-	<0.001	0.0024	-	-	<0.001								abc
	10	-	-	-	-	<0.001	-	-	-	<0.001	<0.001	0.0174	-	<0.001								ab
	100	<0.001	0.0013	-	-	-	<0.001	<0.001	<0.001	-	-	-	-	-	<0.001	<0.001	<0.001					def

P-value of significant differences between treatments are expressed ($p < 0.05$) and non-significant values ($p \geq 0.05$) are noted « - ».

Table S6. Percentage of embryonic development after 24 h exposure to leachates from new and aged plastic gear.

Leachate concentration (g.L ⁻¹)	Control (%)	New 24 h leachate (%)	Aged 24 h leachate (%)	New 120 h leachate (%)	Aged 120 h leachate (%)
0	82.9 ± 11.3				
0.1		74.4 ± 17.3	95.6 ± 16.3	61.9 ± 11.7	96.3 ± 7.1
1		79.7 ± 14.2	96.2 ± 10.9	68.1 ± 16.0	91.2 ± 15.8
10		74.8 ± 16.5	92.7 ± 10.3	81.9 ± 6.1	97.3 ± 3.1
100		44.7 ± 6.8	30.3 ± 14.9	22.4 ± 2.9	44.9 ± 12.4

Values resulting from the average of five replicates (mean ± standard deviation).

Table S7. Results of Tukey's post-hoc test performed on embryo development data square root transformed.

g.L ⁻¹	Control 0	New 24 h leachate				Aged 24 h leachate				New 120 h leachate				Aged 120 h leachate				Group	
		0.1	1	10	100	0.1	1	10	100	0.1	1	10	100	0.1	1	10	100		
Control	0																		abc
N-24	0.1	-																	abcd
	1	-	-																abcd
	10	-	-	-															abcd
	100	0.0041	-	-	-														def
A-24	0.1	-	-	-	<0.001														ab
	1	-	-	-	<0.001	-													ab
	10	-	-	-	<0.001	-	-												ab
	100	<0.001	0.0064	<0.001	0.0051	-	<0.001	<0.001	<0.001										ef
N-120	0.1	-	-	-	-	0.0493	0.0099	0.0311	-										cdef
	1	-	-	-	-	-	-	-	-	-									bcde
	10	-	-	-	-	-	-	-	<0.001	-	0.0148								abcd
	100	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	0.0062	<0.001							f
A-120	0.1	-	-	-	<0.001	-	-	-	<0.001	0.0073	-	-	<0.001						ab
	1	-	-	-	<0.001	-	-	-	<0.001	0.0303	-	-	<0.001	-					ab
	10	-	-	-	<0.001	-	-	-	<0.001	0.0014	-	-	<0.001	-	-				a
	100	0.0043	-	-	-	-	<0.001	<0.001	<0.001	-	-	-	-	<0.001	<0.001	<0.001			def

P-value of significant differences between treatments are expressed ($p < 0.05$) and non-significant values ($p \geq 0.05$) are noted « - ».

Table S8. Larval stages after 24 h exposure to leachates from new and aged plastic gear.

Leachate concentration (g.L ⁻¹)	Control (%)	New 24 h leachate (%)	Aged 24 h leachate (%)	New 120 h leachate (%)	Aged 120 h leachate (%)
<i>Trochophore larvae</i>					
0	1.4 ± 1.1				
0.1		0.9 ± 1.2	2.7 ± 2.6	2.5 ± 2.0	3.2 ± 2.0
1		1.4 ± 1.0	3.6 ± 3.1	1.1 ± 1.4	2.1 ± 0.8
10		1.0 ± 1.5	2.5 ± 1.7	0.6 ± 0.9	0.4 ± 0.5
100		99.6 ± 0.8	100.0 ± 0.0	100.0 ± 0.0	61.7 ± 9.5
<i>D-stage larvae</i>					
0	98.5 ± 1.1				
0.1		99.1 ± 1.2	96.6 ± 2.1	97.5 ± 2.0	95.1 ± 2.0
1		98.3 ± 1.3	96.6 ± 2.1	98.6 ± 1.3	96.3 ± 2.3
10		97.6 ± 2.0	97.1 ± 1.6	98.7 ± 1.2	99.1 ± 1.6
100		0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	22.9 ± 7.3
<i>Dead larvae</i>					
0	0.1 ± 0.3				
0.1		0.0 ± 0.0	0.7 ± 1.1	0.0 ± 0.0	1.7 ± 0.9
1		0.2 ± 0.5	0.0 ± 0.0	0.3 ± 0.6	1.7 ± 1.6
10		1.4 ± 1.7	0.4 ± 0.5	0.7 ± 1.0	0.6 ± 1.2
100		0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	15.4 ± 9.2

Values resulting from the average of five replicates (mean ± standard deviation).

Table S9. Results of Tukey's post-hoc test performed on larval stages (24 h) square root transformed.

g.L ⁻¹	Control					New 24 h leachate					Aged 24 h leachate					New 120 h leachate					Aged 120 h leachate					Group
	0	0.1	1	10	100	0.1	1	10	100	0.1	1	10	100	0.1	1	10	100	0.1	1	10	100					
<i>Trochophore larvae</i>																										
Control	0																					a				
N-24	0.1	-																				a				
	1	-	-																			a				
	10	-	-	-																		a				
	100	<0.001	<0.001	<0.001	<0.001																		c			
A-24	0.1	-	-	-	-	<0.001																a				
	1	-	-	-	-	<0.001	-															a				
	10	-	-	-	-	<0.001	-	-														a				
	100	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001														c			
N-120	0.1	-	-	-	-	<0.001	-	-	-	<0.001												a				
	1	-	-	-	-	<0.001	-	-	-	<0.001	-											a				
	10	-	-	-	-	<0.001	-	-	-	<0.001	-	-										a				
	100	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001										c			
A-120	0.1	-	-	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001								a				
	1	-	-	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001	-							a				
	10	-	-	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001	-	-						a				
	100	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		b			
<i>D-stage larvae</i>																										
Control	0																						ab			
N-24	0.1	-																					a			
	1	-	-																				ab			
	10	-	-	-																			ab			
	100	<0.001	<0.001	<0.001	<0.001																		d			
A-24	0.1	-	-	-	-	<0.001	-																ab			
	1	-	-	-	-	<0.001	-	-															ab			
	10	-	-	-	-	<0.001	-	-															ab			
	100	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001														d			
N-120	0.1	-	-	-	-	<0.001	-	-	-	<0.001	-												ab			
	1	-	-	-	-	<0.001	-	-	-	<0.001	-	-											ab			
	10	-	-	-	-	<0.001	-	-	-	<0.001	-	-											ab			
	100	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001										d			
A-120	0.1	-	0.0499	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001	-								b			
	1	-	-	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001	-	-							ab			
	10	-	-	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001	-	-							a			
	100	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	c			
<i>Dead larvae</i>																										
Control	0																						a			
N-24	0.1	-																					a			
	1	-	-																				a			
	10	-	-	-																			ab			
	100	-	-	-	-																		ab			
A-24	0.1	-	-	-	-																		ab			

	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a
	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ab
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a
N-120	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a
	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ab
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a
A-120	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ab
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ab
	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ab
	100	<0.001	0.0039	0.0460	-	-	-	0.0039	-	0.0039	0.0039	0.0487	-	0.0039	-	-	-	-	-	-	b

P-value of significant differences between treatments are expressed ($p < 0.05$) and non-significant values ($p \geq 0.05$) are noted « - ».

Table S10. Larval stages after 48 h exposure to leachates from new and aged plastic gear.

Leachate concentration (g.L ⁻¹)	Control (%)	New 24 h leachate (%)	Aged 24 h leachate (%)	New 120 h leachate (%)	Aged 120 h leachate (%)
<i>Trochophore larvae</i>					
0	0.0 ± 0.0				
0.1		0.0 ± 0.0	0.7 ± 0.9	0.0 ± 0.0	0.0 ± 0.0
1		0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
10		0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
100		100.0 ± 0.0	100.0 ± 0.0	100.0 ± 0.0	0.0 ± 0.0
<i>D-stage larvae</i>					
0	99.3 ± 0.6				
0.1		99.2 ± 0.8	92.3 ± 4.7	24.3 ± 11.4	89.7 ± 5.3
1		63.7 ± 37.7	93.8 ± 2.4	46.3 ± 26.2	88.8 ± 4.4
10		48.7 ± 28.2	96.7 ± 3.4	55.7 ± 20.8	87.7 ± 11.3
100		0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	18.7 ± 12.5
<i>Dead larvae</i>					
0	0.7 ± 0.6				
0.1		0.8 ± 0.8	7.0 ± 5.0	75.7 ± 11.4	10.3 ± 5.3
1		36.3 ± 37.7	6.2 ± 2.4	53.7 ± 26.2	11.2 ± 4.4
10		51.3 ± 28.2	3.3 ± 3.4	44.3 ± 20.8	12.3 ± 11.3
100		0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	81.3 ± 12.5

Values resulting from the average of five replicates (mean ± standard deviation).

Table S11. Results of Tukey's post-hoc test performed on larval stages (48 h) square root transformed.

g.L ⁻¹	Control	New 24 h leachate				Aged 24 h leachate				New 120 h leachate				Aged 120 h leachate				Group
	0	0.1	1	10	100	0.1	1	10	100	0.1	1	10	100	0.1	1	10	100	
<i>Trochophore larvae</i>																		
Control	0																	a
N-24	0.1	-																a
	1	-	-															a
	10	-	-	-														a
	100	<0.001	<0.001	<0.001	<0.001													c
A-24	0.1	<0.001	0.0013	0.0030	0.0013	<0.001												b
	1	-	-	-	-	-	0.0013											a
	10	-	-	-	-	-	0.0013	-										a
	100	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-									c
N-120	0.1	-	-	-	-	-	0.0013	-	-	-								a
	1	-	-	-	-	-	0.0013	-	-	-								a
	10	-	-	-	-	-	0.0013	-	-	-								a
	100	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					c
A-120	0.1	-	-	-	-	-	0.0013	-	-	-				<0.001				a
	1	-	-	-	-	-	0.0013	-	-	-				<0.001				a
	10	-	-	-	-	-	0.0030	-	-	-				<0.001				a
	100	-	-	-	-	<0.001	0.0013	-	-	<0.001				<0.001				a
<i>D-stage larvae</i>																		
Control	0																	a
N-24	0.1	-																ab
	1	-	-															abcd
	10	-	-	-														abcd
	100	<0.001	0.0015	-	-													d
A-24	0.1	-	-	-	-	-												abcd
	1	-	-	-	-	-												abcd
	10	-	-	-	-	0.0133												abc
	100	0.0020	0.0186	-	-	-												d
N-120	0.1	0.0052	-	-	-	-												bcd
	1	-	-	-	-	-												abcd
	10	-	-	-	-	-												abcd
	100	<0.001	0.0015	-	-	-			0.0133	-								d
A-120	0.1	-	-	-	-	-												abcd
	1	-	-	-	-	-												abcd
	10	-	-	-	-	-												abcd
	100	0.0022	0.0387	-	-	-												cd
<i>Dead larvae</i>																		
Control	0																	a
N-24	0.1	-																ab
	1	-	-															abc
	10	-	-	-														abc
	100	-	-	-	-													a
A-24	0.1	-	-	-	-													abc

	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	abc
	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	abc
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	bc
N-120	0.1	0.0021	0.0364	-	-	0.0022	-	-	-	0.0254	-	-	-	-	-	-	-	-	c
	1	0.0424	-	-	-	0.0306	-	-	-	-	-	-	-	-	-	-	-	-	abc
	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	abc
	100	-	-	-	-	-	-	-	-	-	0.0022	0.0306	-	-	-	-	-	-	a
A-120	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	abc
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	abc
	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	abc
	100	<0.001	0.0189	-	-	0.0010	-	-	-	0.0142	-	-	-	-	0.0010	-	-	-	c

P-value of significant differences between treatments are expressed ($p < 0.05$) and non-significant values ($p \geq 0.05$) are noted « - ».