

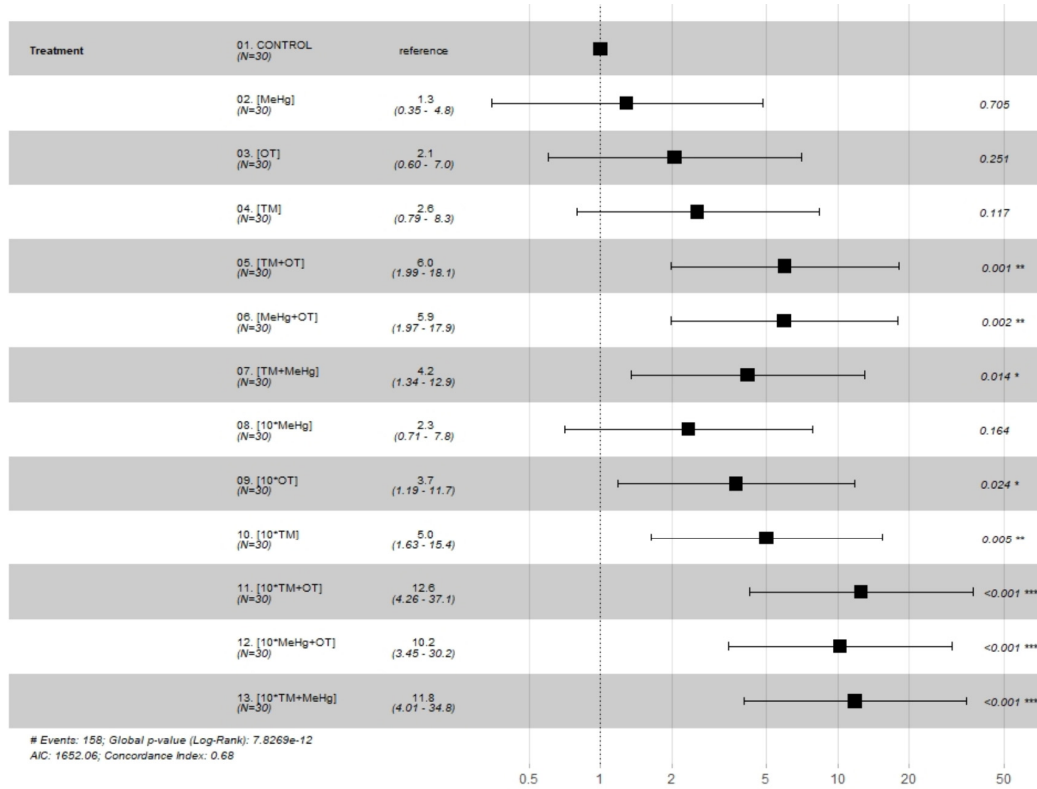
Genotoxic impact of methylmercury, trace metals and organotins on the Qatari mangrove shrimp, *Palaemon khor*

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Supporting information

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A



B

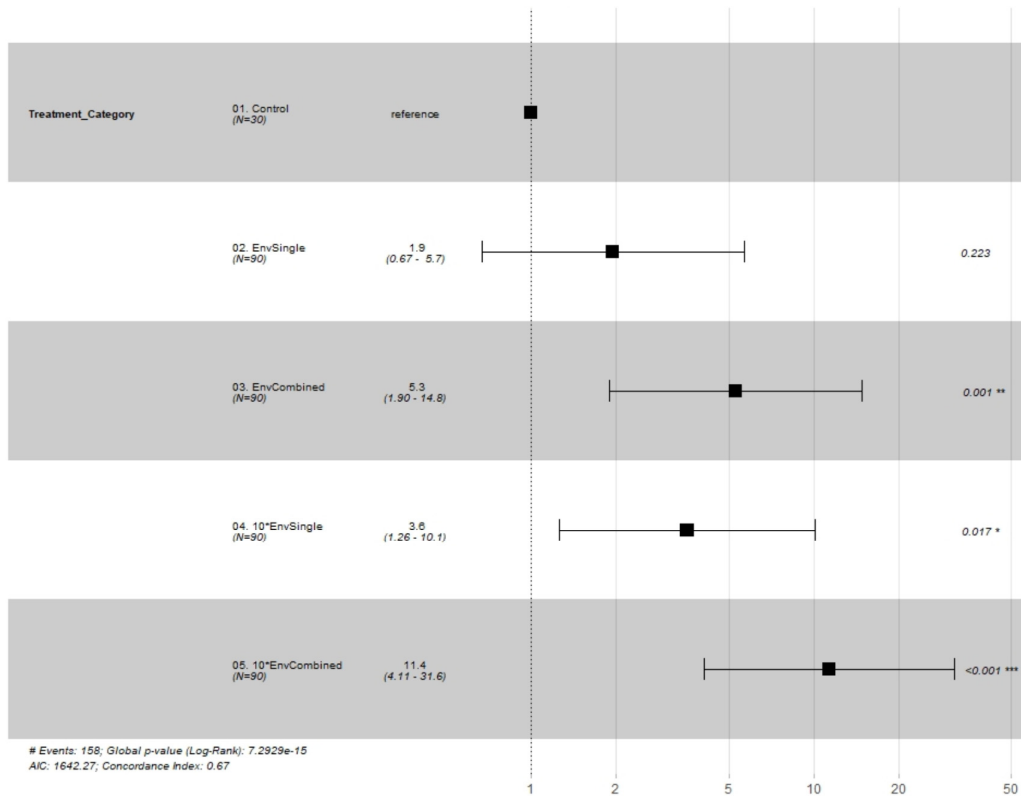
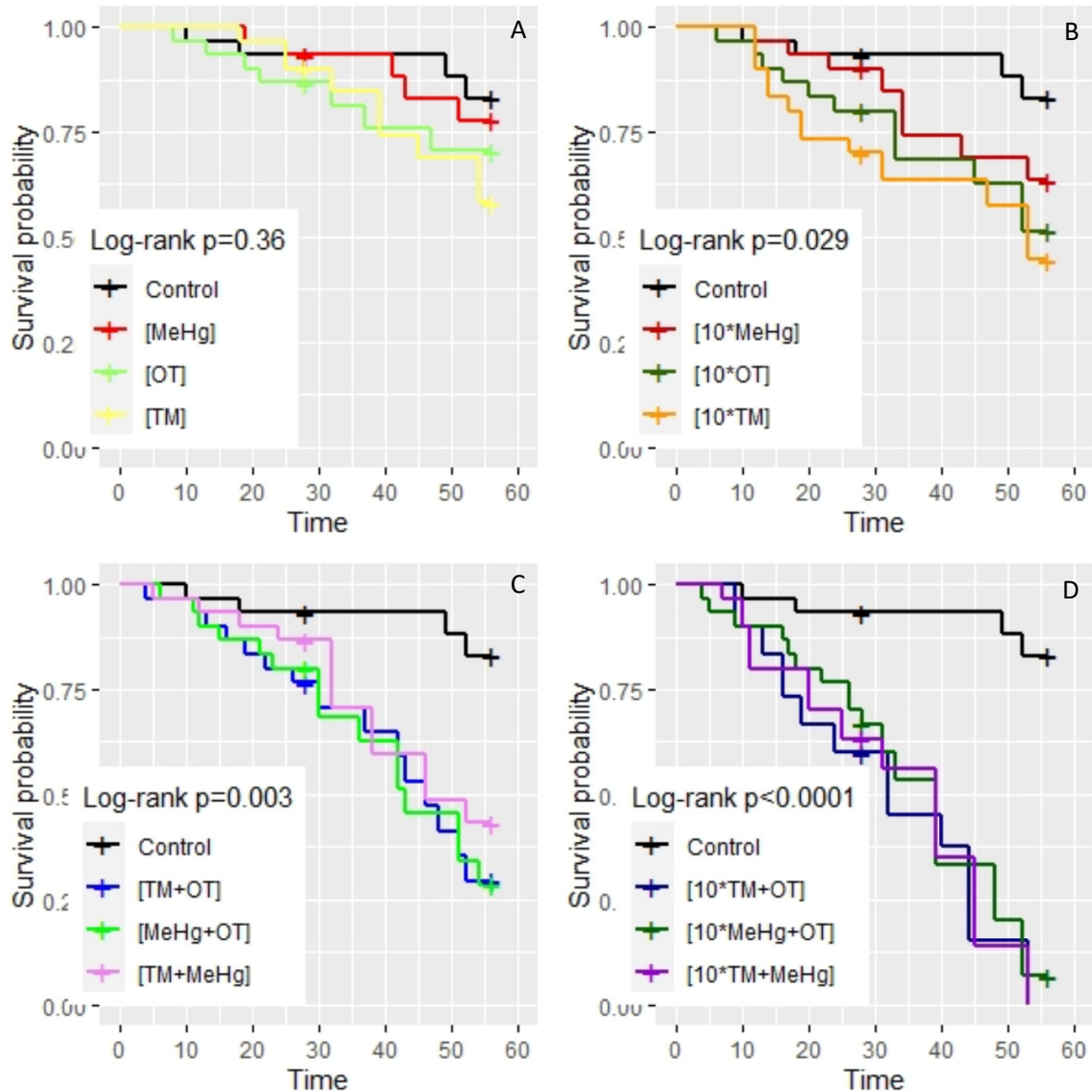
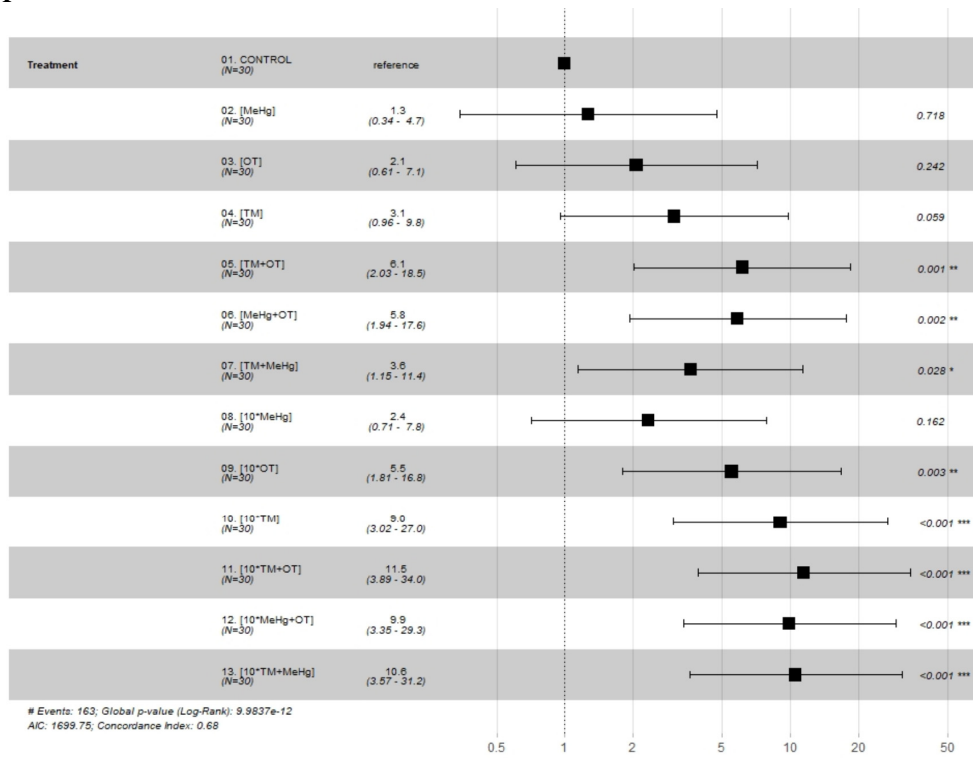


Figure S1. Forest plots of hazard ratios: **A** individual treatments for experiment 1 (for actual concentration please refer to Table 1); **B** treatments for experiment 1 grouped in categories (control; EnvSingle: single contaminant at environmental concentration; 10*EnvSingle: single contaminant at ten times the environmental concentration; EnvCombined: combined chemicals at environmental concentration; 10*EnvCombined: combined chemicals at ten times the environmental concentration). Number of events, global p-values and AIC and Concordance Index can be found below each plot.



FigureS2 Survival curves of *Palaemon khori* for eight weeks of the study, under different treatments (experiment 1). Curves are grouped by categories: **A** single contaminants at reported environmental concentrations; **B** single contaminants at ten times the reported environmental concentration; **C** combination of contaminants at reported environmental concentrations; **D** combination of contaminants at ten times the reported environmental concentrations. Refer to the legend for colors. P values (long-rank model) are reported in each panel. Values of concentrations can be found in Table 1.

A



B

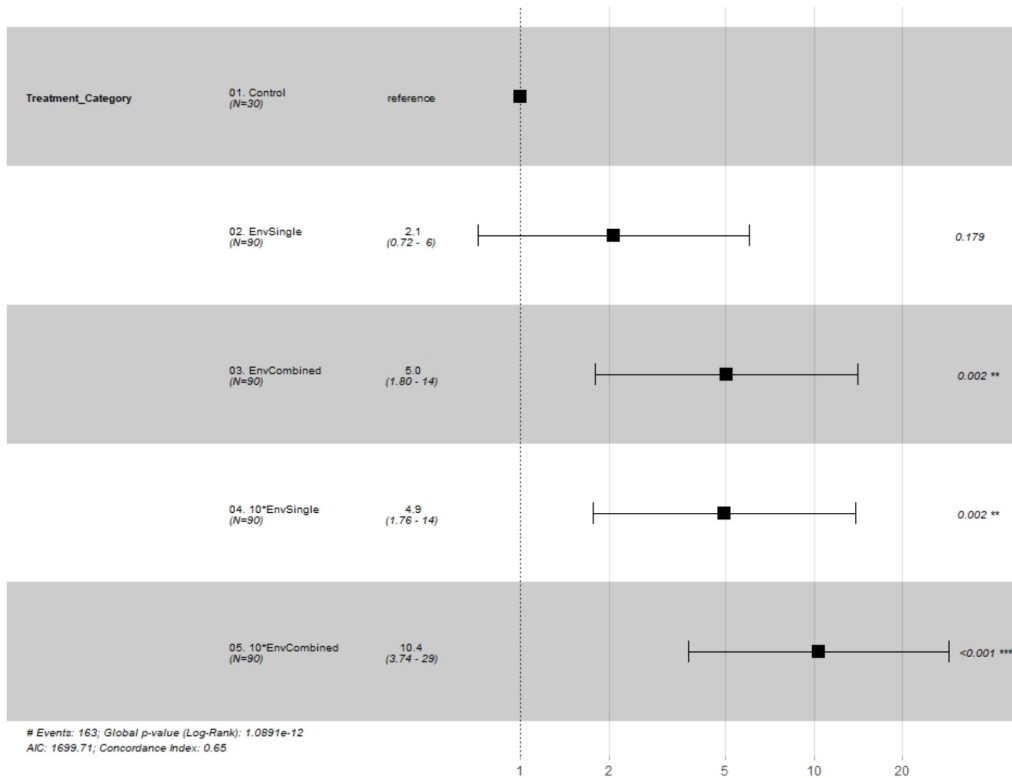
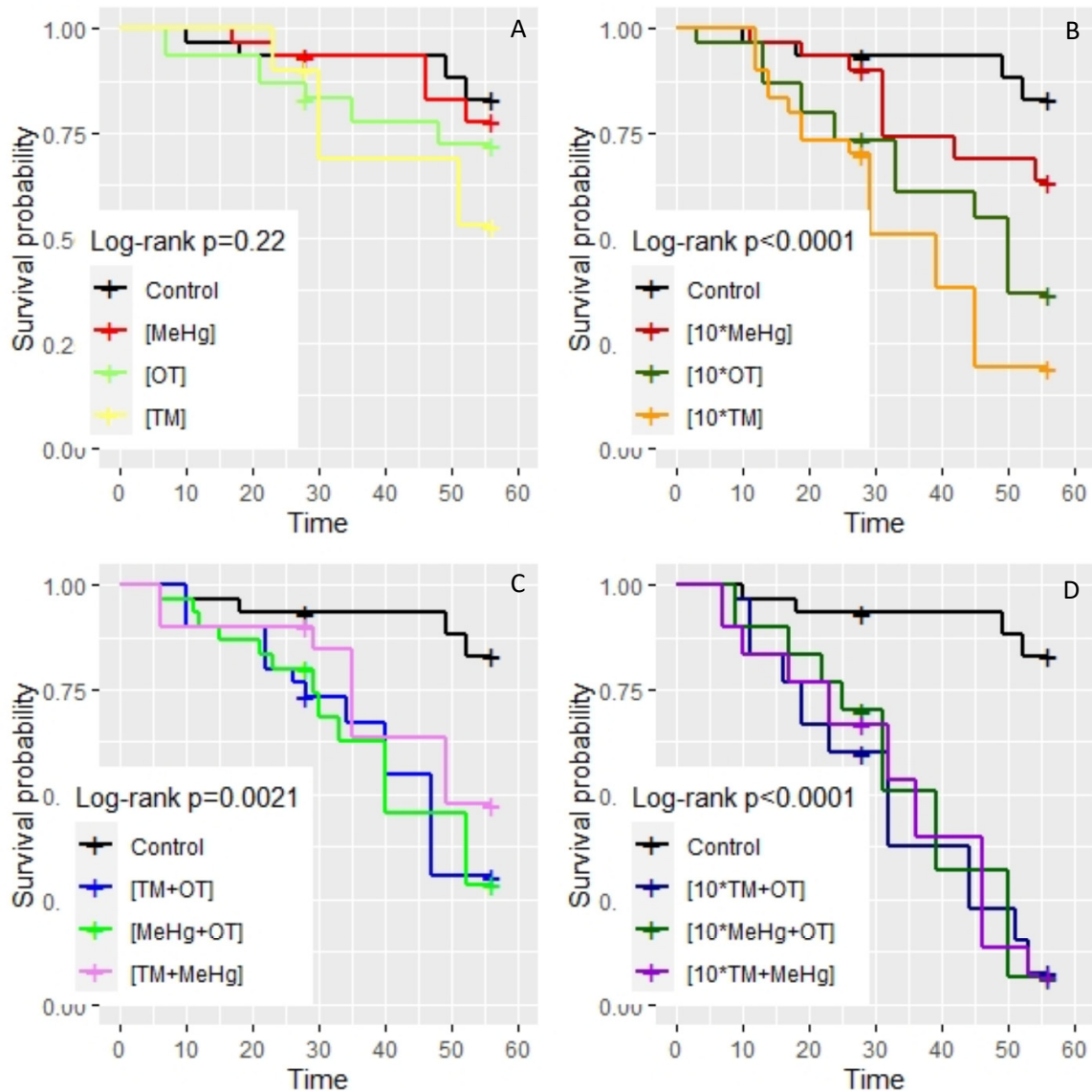


Figure S3. Forest plots of hazard ratios: **A** individual treatments for experiment 2 (for actual concentration please refer to Table 1); **B** treatments for experiment 2 grouped in categories

(control; EnvSingle: single contaminant at environmental concentration; 10*EnvSingle: single contaminant at ten times the environmental concentration; EnvCombined: combined chemicals at environmental concentration; 10*EnvCombined: combined chemicals at ten times the environmental concentration). Number of events, global p-values and AIC and Concordance Index can be found below each plot.



FigureS4 Survival curves of *Palaemon khori* for eight weeks of the study, under different treatments (experiment 2). Curves are grouped by categories: **A** single contaminants at reported environmental concentrations; **B** single contaminants at ten times the reported environmental concentration; **C** combination of contaminants at reported environmental concentrations; **D** combination of contaminants at ten times the reported environmental concentrations. Refer to the legend for colors. P-values (long-rank model) are reported in each panel. Values of concentrations can be found in Table 1.

Table S1 Pairwise comparisons among treatments on survival, using log-rank test for experiment 1. Significant differences are expressed in bold.

EXP1	CONTROL	[MeHg]	[OT]	[TM]	[TM+OT]	[MeHg+OT]	[TM+MeHg]	[10*MeHg]	[10*OT]	[10*TM]	[10*TM+OT]	[10*MeHg+OT]	[10*TM+MeHg]
CONTROL	-	-	-	-	-	-	-	-	-	-	-	-	-
[MeHg]	0.753	-	-	-	-	-	-	-	-	-	-	-	-
[OT]	0.364	0.517	-	-	-	-	-	-	-	-	-	-	-
[TM]	0.178	0.301	0.753	-	-	-	-	-	-	-	-	-	-
[TM+OT]	0.002	0.007	0.058	0.076	-	-	-	-	-	-	-	-	-
[MeHg+OT]	0.003	0.007	0.058	0.077	0.968	-	-	-	-	-	-	-	-
[TM+MeHg]	0.030	0.058	0.263	0.364	0.422	0.425	-	-	-	-	-	-	-
[10*MeHg]	0.263	0.384	0.851	0.899	0.068	0.069	0.349	-	-	-	-	-	-
[10*OT]	0.058	0.096	0.349	0.489	0.345	0.349	0.853	0.414	-	-	-	-	-
[10*TM]	0.018	0.030	0.131	0.195	0.695	0.753	0.695	0.166	0.620	-	-	-	-
[10*TM+OT]	0.000	0.000	0.000	0.000	0.068	0.060	0.007	0.000	0.007	0.052	-	-	-
[10*MeHg+OT]	0.000	0.000	0.002	0.001	0.206	0.158	0.046	0.002	0.030	0.111	0.691	-	-
[10*TM+MeHg]	0.000	0.000	0.000	0.000	0.077	0.066	0.011	0.001	0.010	0.052	0.753	0.753	-

Table S2 Pairwise comparisons among treatments on survival, using log-rank test for experiment 2. Significant differences are expressed in bold.

EXP2	CONTROL	[MeHg]	[OT]	[TM]	[TM+OT]	[MeHg+OT]	[TM+MeHg]	[10*MeHg]	[10*OT]	[10*TM]	[10*TM+OT]	[10*MeHg+OT]	[10*TM+MeHg]
CONTROL	-	-	-	-	-	-	-	-	-	-	-	-	-
[MeHg]	0.798	-	-	-	-	-	-	-	-	-	-	-	-
[OT]	0.363	0.524	-	-	-	-	-	-	-	-	-	-	-
[TM]	0.118	0.182	0.620	-	-	-	-	-	-	-	-	-	-
[TM+OT]	0.003	0.006	0.071	0.121	-	-	-	-	-	-	-	-	-
[MeHg+OT]	0.003	0.005	0.072	0.179	0.933	-	-	-	-	-	-	-	-
[TM+MeHg]	0.058	0.108	0.401	0.799	0.228	0.298	-	-	-	-	-	-	-

[10*MeHg]	0.268	0.381	0.873	0.640	0.084	0.075	0.524	-	-	-	-	-	-
[10*OT]	0.006	0.011	0.108	0.190	0.826	0.919	0.382	0.120	-	-	-	-	-
[10*TM]	0.000	0.000	0.010	0.013	0.327	0.344	0.049	0.010	0.298	-	-	-	-
[10*TM+OT]	0.000	0.000	0.002	0.003	0.120	0.108	0.006	0.002	0.090	0.464	-	-	-
[10*MeHg+OT]	0.000	0.000	0.004	0.004	0.269	0.134	0.026	0.002	0.189	0.919	0.798	-	-
[10*TM+MeHg]	0.000	0.000	0.002	0.004	0.120	0.157	0.010	0.002	0.120	0.827	0.782	0.800	-

Table S3 Pairwise comparisons among treatments on survival, using log-rank test for experiments 1 and 2 combined. Significant differences are expressed in bold.

EXP1+2	CONTROL	[MeHg]	[OT]	[TM]	[TM+OT]	[MeHg+OT]	[TM+MeHg]	[10*MeHg]	[10*OT]	[10*TM]	[10*TM+OT]	[10*MeHg+OT]	[10*TM+MeHg]
CONTROL	-	-	-	-	-	-	-	-	-	-	-	-	-
[MeHg]	0.701	-	-	-	-	-	-	-	-	-	-	-	-
[OT]	0.281	0.328	-	-	-	-	-	-	-	-	-	-	-
[TM]	0.081	0.063	0.488	-	-	-	-	-	-	-	-	-	-
[TM+OT]	0.001	0.000	0.004	0.013	-	-	-	-	-	-	-	-	-
[MeHg+OT]	0.001	0.000	0.004	0.017	0.909	-	-	-	-	-	-	-	-
[TM+MeHg]	0.015	0.006	0.124	0.388	0.155	0.178	-	-	-	-	-	-	-
[10*MeHg]	0.178	0.178	0.756	0.641	0.006	0.005	0.212	-	-	-	-	-	-
[10*OT]	0.008	0.002	0.046	0.155	0.364	0.410	0.641	0.071	-	-	-	-	-
[10*TM]	0.001	0.000	0.002	0.007	0.728	0.701	0.081	0.003	0.256	-	-	-	-
[10*TM+OT]	0.000	0.000	0.000	0.000	0.010	0.009	0.000	0.000	0.001	0.034	-	-	-
[10*MeHg+OT]	0.000	0.000	0.000	0.000	0.060	0.023	0.001	0.000	0.006	0.155	0.603	-	-
[10*TM+MeHg]	0.000	0.000	0.000	0.000	0.011	0.011	0.000	0.000	0.001	0.060	0.690	0.658	-

Table S4 Number of observed metaphases (in ten animals) with corresponding number of aneuploid metaphases for two replicated tanks (except the control) at four and eight weeks after dosage (T4 and T8). Aneuploidy levels were calculated as the ratio between aneuploid and total metaphases. Average aneuploid numbers were calculated for replicated tanks and used for statistical analyses.

Tank	Treatment	T ₄				T ₈			
		Observed Metaphases	Aneuploidy metaphases	Aneuploidy level	Average aneuploidy	Observed metaphase	Aneuploid metaphases	Aneuploidy level	Average aneuploidy
1	Control	91	5	0.05	0.05	89	6	0.07	0.07
2	[MeHg]	23	4	0.17	0.17	62	10	0.16	0.16
14		79	13	0.16		28	4	0.14	
3	[10*MeHg]	30	5	0.17	0.19	73	13	0.18	0.19
15		94	18	0.19		29	6	0.21	
4	[OT]	30	4	0.13	0.13	34	4	0.12	0.12
16		41	5	0.12		44	5	0.11	
5	[10*OT]	35	5	0.14	0.15	22	4	0.18	0.19
17		40	6	0.15		46	9	0.20	
6	[TM]	26	3	0.12	0.12	19	2	0.11	0.12
18		25	3	0.12		22	3	0.14	
7	[10*TM]	22	3	0.14	0.18	24	5	0.21	na
19		17	4	0.24		na	na	na	
8	[TM+MeHg]	9	1	0.11	0.11	19	3	0.16	na
20		18	2	0.11		na	na	na	
9	[10*TM+MeHg]	29	6	0.21	0.18	na	na	na	na
21		11	1	0.09		35	7	0.20	
10	[TM+OT]	28	4	0.14	0.13	22	3	0.14	0.14
22		42	5	0.12		29	4	0.14	
11	[10*TM+OT]	8	1	0.13	0.15	20	3	0.15	na
23		40	6	0.15		na	na	na	
12	[MeHg+OT]	48	9	0.19	0.19	49	9	0.18	0.18
24		25	5	0.20		19	3	0.16	
13	[10*MeHg+OT]	18	3	0.17	0.18	30	6	0.20	0.21
25		49	9	0.18		28	6	0.21	