Supporting Information

Analytical Method

Scanning electron microscopy (SEM) imaging

The surface morphology of micro-plastic (MP) was observed by using a Hitachi S-4700 field emission microscope. Samples that contained MP or MP+Algae were collected, and dried for SEM imaging. Samples were sputter-coated with Au before loading in SEM.

Hydrodynamic size

The hydrodynamic size of MP under different conditions was measured by a Nano-ZS90 Zetasizer (Malvern Instruments Ltd, UK). These particle suspensions were prepared, as described in section 2.2 in the text. For each condition, 1 mL of test solution was sampled at 2 cm below the suspension surface (total depth was about 5 cm). To investigate the size change of MP during the experiment, three sampling times, which could cover the entire process, were selected. The first two samples were collected after 1 min and 24 h mixing, respectively. After the 24 h mixing, the suspensions were allowed to settle for 24 h, and, then, the last sample was collected. All samples were analyzed immediately after collection, and each sample was measured in triplicate.

Total organic carbon (TOC) analysis

The TOC was measured by a Shimadzu TOC-L with an ASI-L liquid auto-sampler. Samples that contained Pb, MP, and Pb+MP were prepared in the culture medium, respectively. The concentrations of Pb and MP, in a corresponding solution were 2,500 μg/L and 20 mg/L, respectively. A control sample, that only contained a culture medium, was also included. These samples were prepared, as described in section 2.2 in the text. After mixing, the test solution was filtered through a 0.22 μm nylon membrane filter. All of the TOC tests were conducted in duplicate.

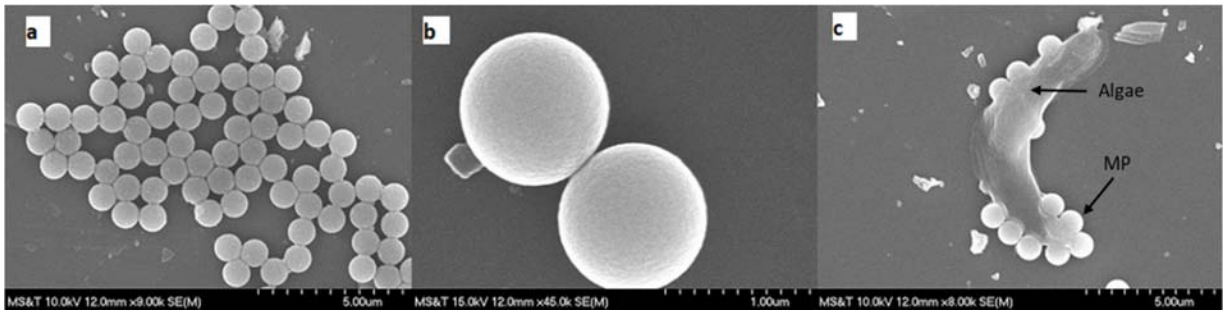

Figure S1. SEM image of (a) MP; (b) MP surface morphology; (c) MP and algae.

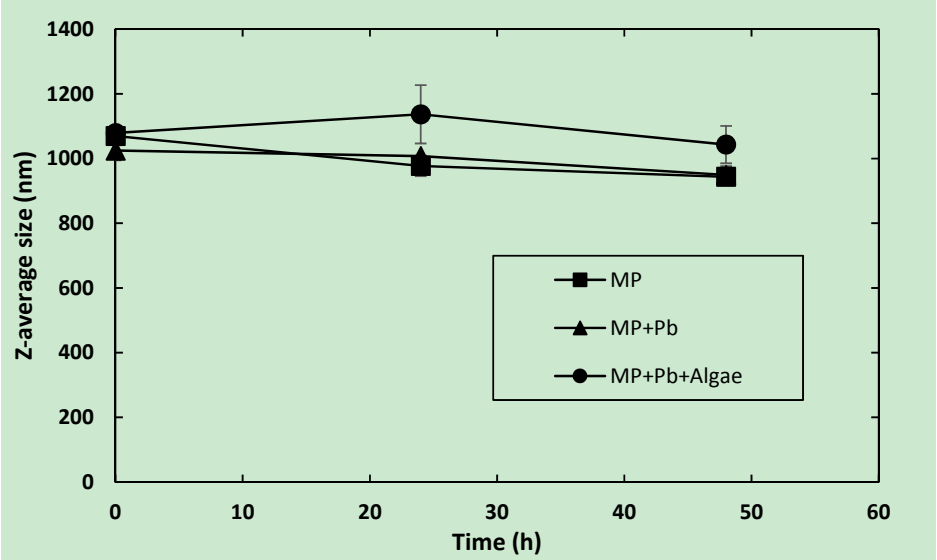

Figure S2. Hydrodynamic size of MP in a culture medium during the experiment. Conditions of exposure medium: MP = 20 mg/L; [Pb] = 2,500 μg/L; Algae = 1.8×10^5 cell/mL. Standard deviation is represented by an error bar attached to each point (N=3).

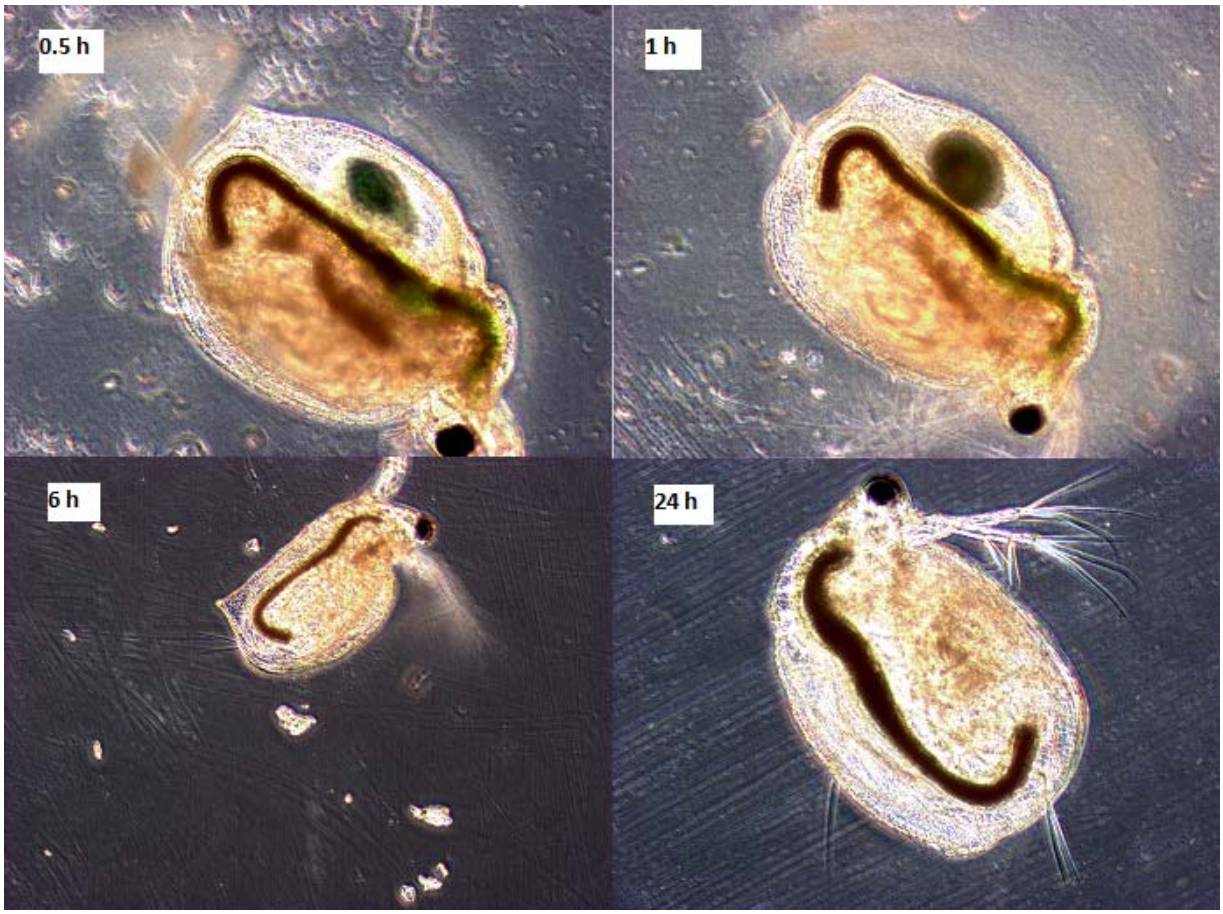

Figure S3. MP accumulation in *C. dubia*. Conditions of the exposure medium: MP = 20 mg/L. Photos were *C. dubia* from 0.5, 1, 6, 24 h of exposure.

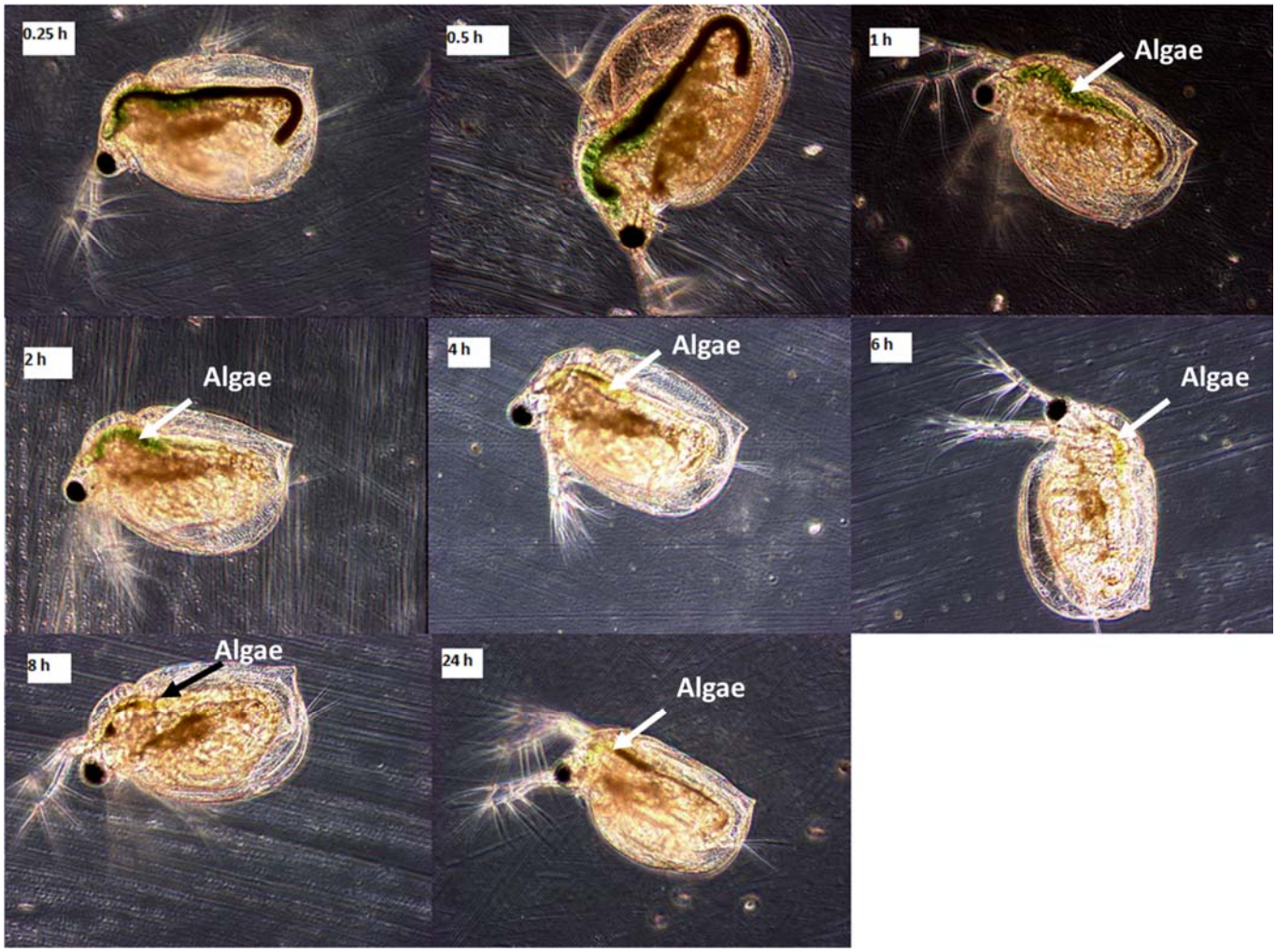

Figure S4. MP accumulation in *C. dubia* in the presence of Pb + algae. Conditions of the exposure medium: [Pb] = 2,500 μg/L; MP = 20 mg/L; Algae = 1.8×10^5 cell/mL. Photos were *C. dubia* from 0.25, 0.5, 1, 2, 4, 6, 8, 24 h of exposure.

Table S1 TIC and TOC of different solutions

Sample ID	TIC (mg/L)	TOC (mg/L)
Culture medium	12.68±0.05	2.27±0.60
Pb[a]	11.73±0.13	2.73±0.12
MP[b]	12.74±0.01	3.39±0.22
MP+Pb[c]	11.55±0.16	3.55±0.89

Note: a. [Pb] = 2,500 μg/L; b. MP = 20 mg/L; c. MP = 20 mg/L and [Pb] = 2500 μg/L.