

Figure S1. HTR-8/SVneo cells were exposed to 2 μm PS-MPs. (A) The representative transmission electron microscopy image of HTR-8 /SVneo cells treated with 2 μm PS-MPs at a concentration of 100 $\mu\text{g}/\text{mL}$ for 48 h. Note: PS-MPs, polystyrene microparticles; TEM, transmission electron microscope.

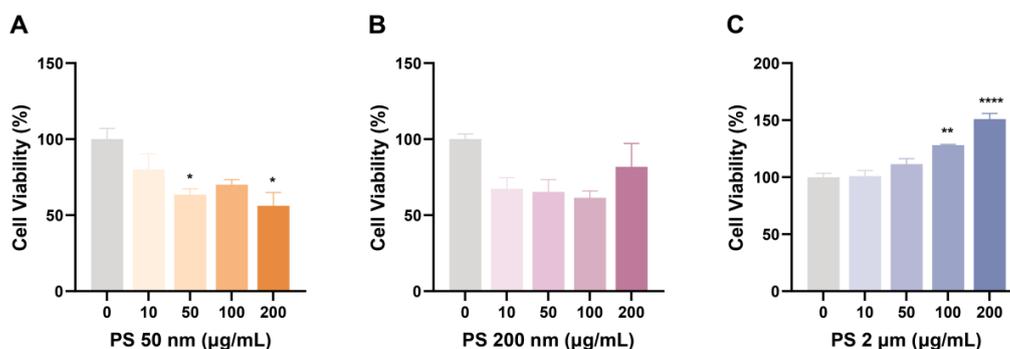


Figure S2. Changes in the viability of HTR-8/SVneo cells following a 12-hour exposure to PS-MNPs. (A-C) The proliferation capacity of HTR-8/SVneo cells was detected by CCK-8 12 h exposure to PS-MNPs of 50 nm (A), 200 nm (B), and 2 μm (C) at different concentrations (0, 10, 50, 100, 200 $\mu\text{g}/\text{mL}$). Results were presented as means \pm SEM ($n=3/\text{group}$). Statistical comparisons were performed using one-way ANOVA with the Tukey post hoc test. * $p < 0.05$, ** $p < 0.01$, **** $p < 0.0001$ in comparison to the control group (0 $\mu\text{g}/\text{mL}$). Note: ANOVA, analysis of variance; CCK-8, cell counting kit-8; PS-MNPs, polystyrene micro-/nano-plastics; PS-NPs, polystyrene nanoparticles; SEM, standard error of mean.

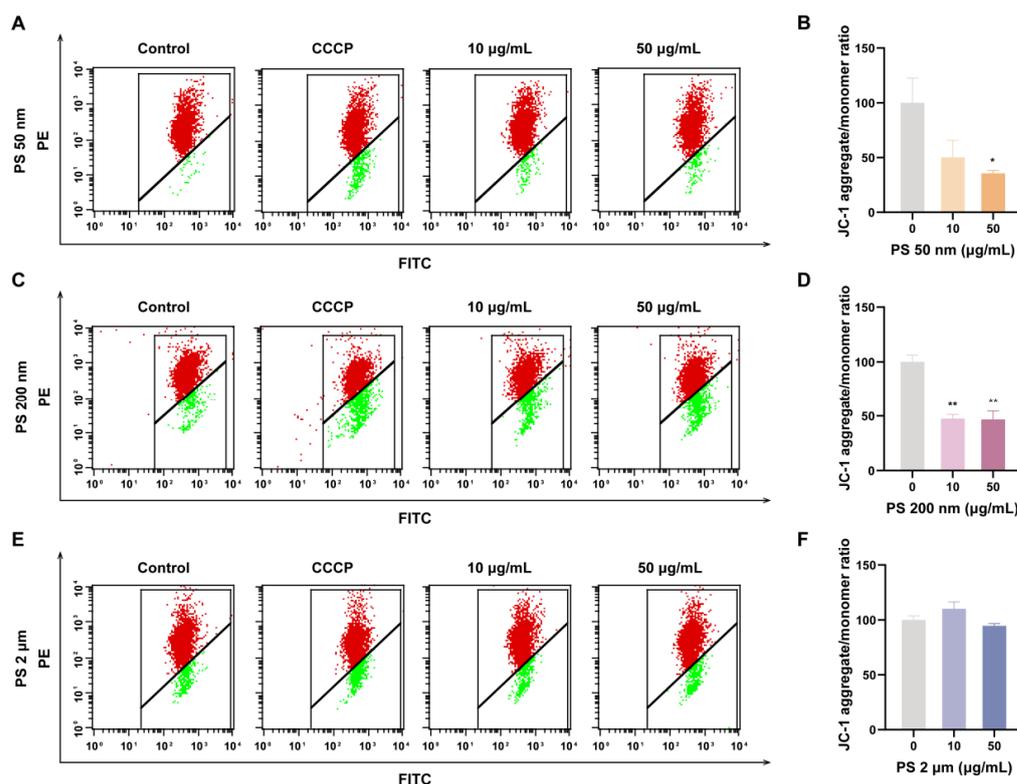


Figure S3. The mitochondrial membrane potential changes in HTR-8/SVneo cells exposed to low doses of PS-MNPs. (A-B) MMP ($\Delta\Psi_m$) of trophoblast cells was assessed using flow cytometry after staining with JC-1 after exposure to 0 (Control), 10, 50 $\mu\text{g/mL}$ 50 nm PS-NPs for 48 h; (C-D) The analysis of MMP ($\Delta\Psi_m$) using JC-1 Dye conducted via flow cytometry. The cells were exposed to different concentrations of 200 nm PS-NPs (0 $\mu\text{g/mL}$ as control, 10 $\mu\text{g/mL}$, and 50 $\mu\text{g/mL}$) for a duration of 48 h; (E-F) The MMP ($\Delta\Psi_m$) of HTR-8/SVneo cells was assessed using the JC-1 flow cytometry assay after being treated with 2 μm PS-MPs at concentrations of 0 (Control), 10, and 50 $\mu\text{g/mL}$. The positive control group was obtained by treating HTR-8/SVneo cells with CCCP at the ratio of 1:1000 for 20 min. Data were analyzed using FlowJo software and presented as means \pm SEM ($n=3/\text{group}$). Statistical comparisons were conducted utilizing one-way ANOVA with the Tukey post hoc test. $*p < 0.05$, $**p < 0.01$ in comparison to the control group. Notes: ANOVA, analysis of variance; CCCP, carbonyl cyanide 3-chlorophenylhydrazone; MMP ($\Delta\Psi_m$), mitochondrial membrane potential; PS-MPs, polystyrene microplastics; PS-MNPs, polystyrene micro-/nano-plastics; PS-NPs, polystyrene nanoparticles; SEM, standard error of mean.

Correlation Fit Scores	The potential health risk level of environmental compounds (scores)			
	Very likely negative correlation (-2)	Possible negative correlation (-1)	Possible positive correlation (1)	Very likely positive correlation (2)
Extremely High (4,5]	High-Protection (-8,-10]	Mid-Protection (-4,-5]	Mid-Risk (4,5]	High-Risk (8,10]
High (3,4]	Mid-Protection (-6,-8]	Low-Protection (-3,-4]	Low-Risk (3,4]	Mid-Risk (6,8]
Medium (2,3]	Mid-Protection (-4,-6]	Low-Protection (-2,-3]	Low-Risk (2,3]	Mid-Risk (4,6]
Low (1,2]	Low-Protection (-2,-4]	Low-Protection (-1,-2]	Low-Risk (1,2]	Low-Risk (2,4]
Extremely Low (0,1]	Low-Protection (0,-2]	Low-Protection (0,-1]	Low-Risk (0,1]	Low-Risk (0,2]

High-level Protection	Mid-level Protection	Low-level Protection	Low-level Risk	Mid-level Risk	High-level Risk
-10	-8	-4	0	4	8 10

Figure S4. The risk matrix and risk classification were established in accordance with the TRAEC strategy framework.