

Supporting Information

Spatiotemporal Distribution Characteristics of Physicochemical Properties for Waste Plastics with Different Landfill Age and Depth

Fei Yu^{1,2}, Wei Chu¹, Leilihe Zhang¹, Youcai Zhao³, Jie Ma^{2,3,*}

¹ College of Oceanography and Ecological Science, Shanghai Ocean University, No
999, Huchenghuan Road, Shanghai, 201306, PR. China

² School of Civil Engineering, Kashi University, Kashi 844000, PR. China

³ Research Center for Environmental Functional Materials, College of Environmental
Science and Engineering, Tongji University, 1239 Siping Road, Shanghai, 200092,
P.R. China

(1) Supplementary figures

- Figure.S1. Geographical location of 8 sampling points.
- Figure S2. FTIR spectra of actual samples from landfills.
- Figure S3. Fourier infrared (FTIR) comparison plots for each sampling point.
- Figure S4. Hydroxyl index of waste plastics.
- Figure S5. Changes of PE waste plastics with landfill time for a landfill depth of 5m.
- Figure S6, Distribution of element proportion of waste plastics with landfill age.
- Figure S7, Distribution of element proportion of waste plastics with landfill depth.



Figure.S1. Geographical location of 8 sampling points

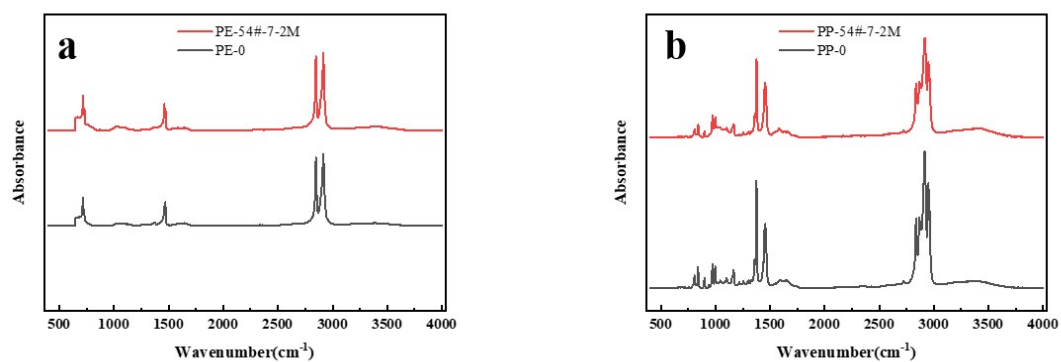


Figure S2. FTIR spectra of actual samples from landfills. (a) PE plastic; (b) PP plastic.
(Notes: x# PE/PP-y-z, x represents the sampling point, y represents the age of the landfill, and z represents the depth of the landfill)

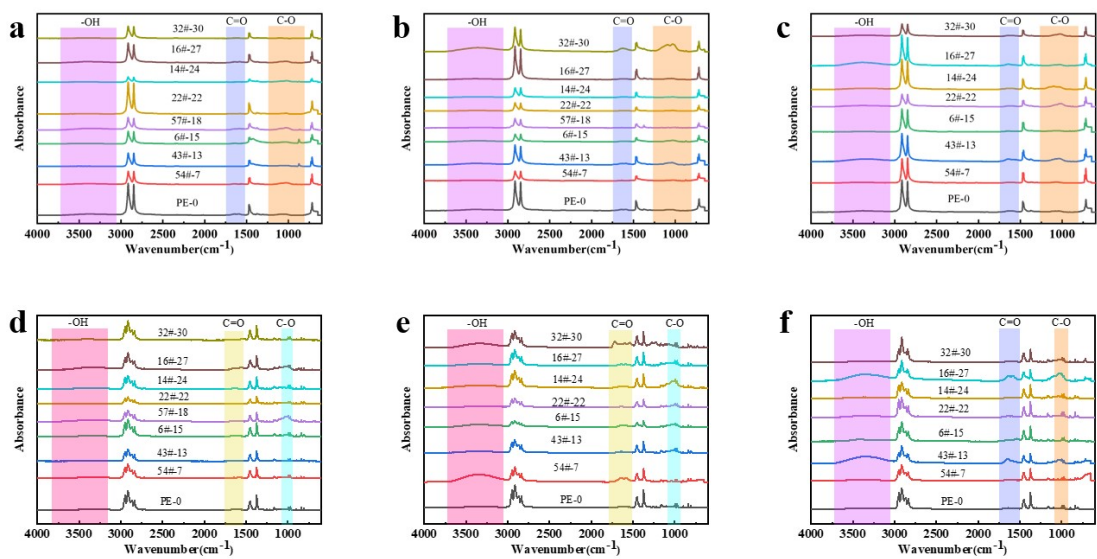


Figure S3. Fourier infrared (FTIR) comparison plots for each sampling point. (a) PE plastics with different landfill ages at 2m landfill depth; (b) PE plastics with different landfill ages at 5m landfill depth; (c) PE plastics with different landfill ages at 5m landfill depth; (d) PP plastics with different landfill ages at 2m landfill depth; (e) PP plastics with different landfill ages at 5m landfill depth; (f) PP plastics with different landfill ages at 8m landfill depth.

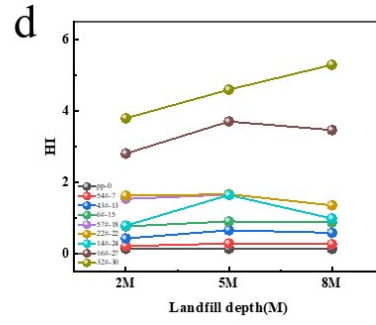
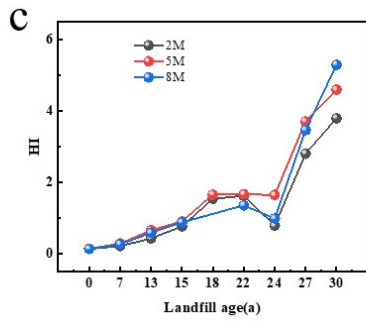
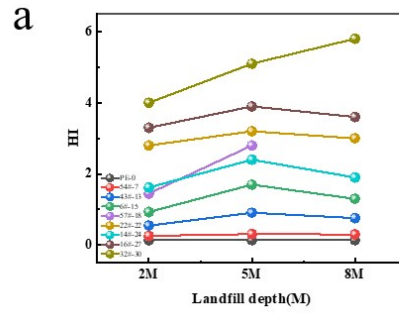
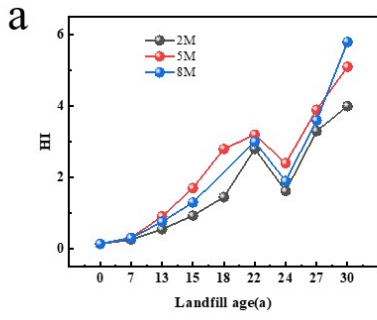


Figure S4. Hydroxyl index of waste plastics. (a) PE plastics with landfill time;(b) PE plastics with landfill depth; (c) PP plastics with landfill time ;(d) PP plastics with landfill depth.

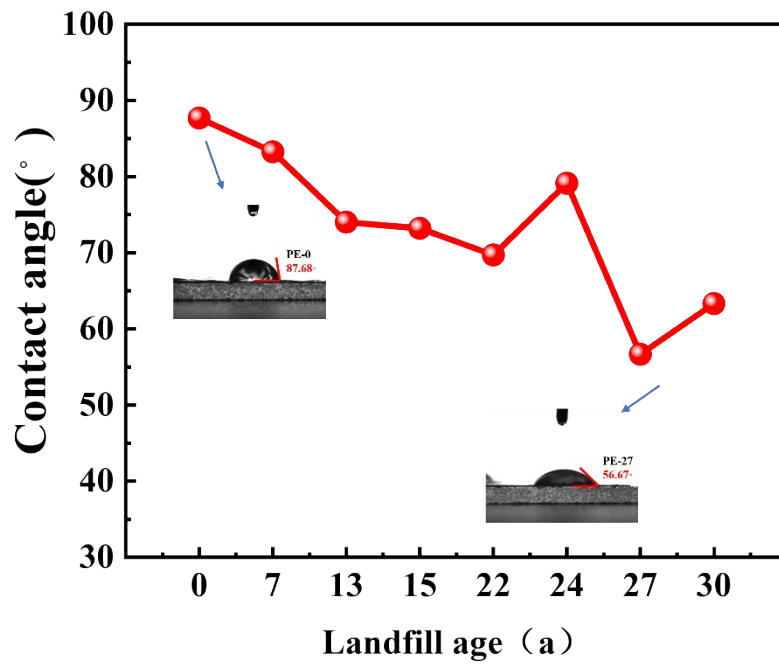


Figure S5. Changes of PE waste plastics with landfill time for a landfill depth of 5m.

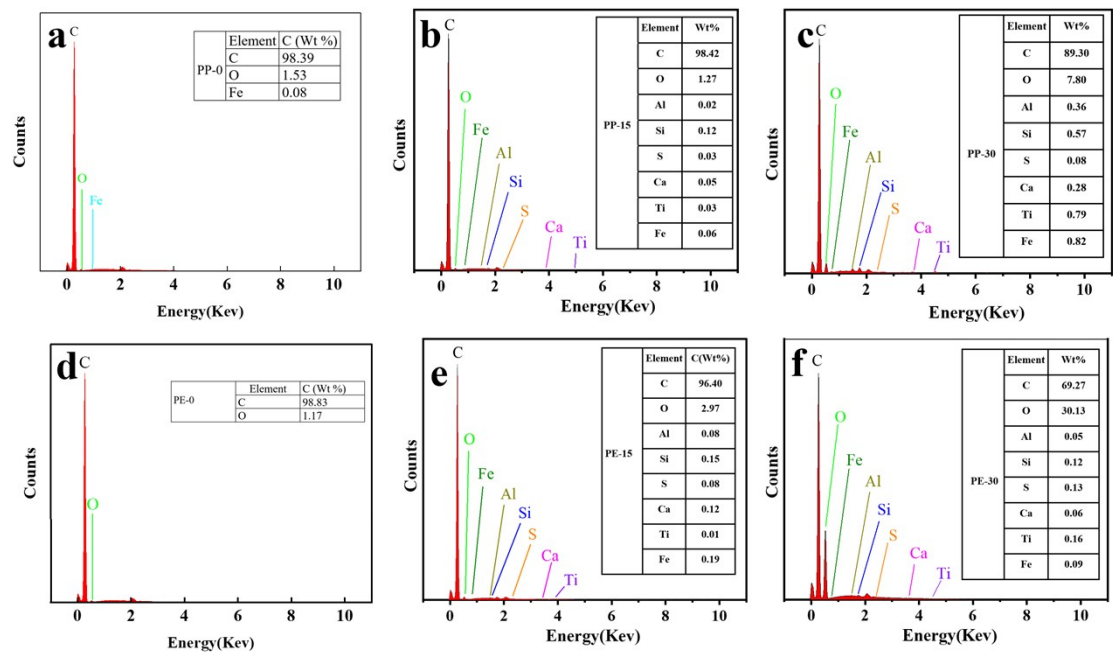


Figure S6, Distribution of element proportion of waste plastics with landfill age. (a) Virgin PP plastic;(b) Abandoned PP plastic buried for 15 years;(c) Abandoned PP plastic buried for 30 years;(d) Virgin PE plastic;(e) Abandoned PE plastic buried for 15 years;(f) Abandoned PE plastic buried for 30 years.

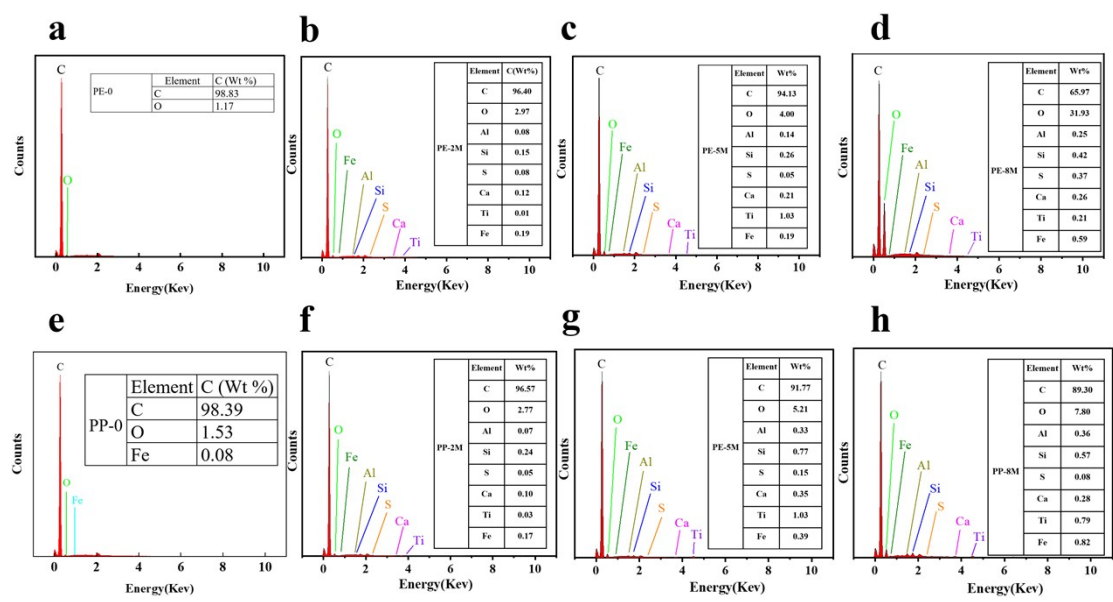


Figure S7, Distribution of element proportion of waste plastics with landfill depth. (a) virgin PE plastics; (b) waste PE plastics at 2m depth of landfill; (c) waste PE plastics at 5m depth of landfill; (d) waste PE plastics at 8m depth of landfill; (e) virgin PP plastics; (f) waste PP plastics at 2m depth of landfill; (g) waste PP plastics at 5m depth of landfill; (h) waste PP plastics at 2m depth of landfill.

(2) Supplementary tables

Table s1 Details of sampling points

Table s1 Details of sampling points

Sampling sites	Depth (m)	Landfill age(a)	Longitude	Latitude	Collection date
16#	2m	27	121.87107	31.04738	January 11,2021
6#	2m	15	121.86666	31.05771	January 12,2021
22#	2m	22	121.86539	31.05721	January 12,2021
32#	2m	30	121.86991	31.04610	January 13,2021
43/44#	2m	13	121.87480	31.04610	January 13,2021
57#	2m	18	121.88087	31.03430	January 13,2021
14#	2m	24	121.87044	31.03079	January 17,2021
54#	2m	7	121.87961	31.04831	January 19,2021
16#	5m	27	121.87107	31.03418	January 11,2021
6#	5m	15	121.86666	31.04738	January 12,2021
22#	5m	22	121.86539	31.05771	January 12,2021
32#	5m	30	121.86991	31.05721	January 13,2021
43/44#	5m	13	121.87480	31.04610	January 13,2021
57#	5m	18	121.88087	31.04610	January 13,2021
14#	5m	24	121.87044	31.03430	January 17,2021
54#	5m	7	121.87961	31.03079	January 19,2021
16#	8m	27	121.87107	31.04831	January 11,2021
6#	8m	15	121.86666	31.04738	January 12,2021
22#	8m	22	121.86539	31.05771	January 12,2021
32#	8m	30	121.86991	31.05721	January 13,2021
43/44#	8m	13	121.87480	31.04610	January 13,2021
57#	8m	18	121.88087	31.04610	January 13,2021
14#	8m	24	121.87044	31.03430	January 17,2021
54#	8m	7	121.87961	31.03079	January 19,2021