Supplementary Figure 1. Example of FTIR spectra obtained from water samples collected from the River Thames at Limehouse in November 2019 identified as Polyethylene



Supplementary Table 1. Atmospheric control – Desk filters (Main study – monthly samples 2019-2021)

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| --- | --- | --- |
| Year | Date | Microplastic total (MPT) |
| 2019 | 20th May | 13(3 blue, 9 black, 1 red) |
| 21st May | 8(4 blue, 4 black) |
| 22nd May | 4(1 blue, 3 black) |
| 3rd June | 3(black) |
| 4th June | 0 |
| 19th June | 6(black) |
| 20th June | 0 |
| 24th June | 3(1 black fragment, 2 black fibres) |
| 25th June | 0 |
| 3rd July | 2(1 black fragment, 1 black fibre) |
| 6th august | 6(black fibres) |
| 15th august | 6(2 red fibres, 4 black fibres) |
| 2nd September | 0 |
| 25th September | 0 |
| 26th September | 1(black fibre) |
| 30th September | 3(1 blue fibre, 1 black fibre, 1 red fibre) |
| 2nd October | 2(1 blue fibre, 1 black fibre) |
| 24th October | 2(1Red fibre, 1 black fibre) |
| 25th October | 5(2 red fibres, 3 black fibres) |
| 30th October | 0 |
| 2nd November | 0 |
| 4th November | 5(4 black fibres, 1 red fibre) |
| 5th November | 7(3 black fibres, 3 blue fibres, 1 red fibre) |
| 11 November | 3(1 red fibre,1 blue fibre,1 black fibre) |
| 21st November | 4(3 black fibres, 1 red fibre) |
| 24th November | 0 |
| 9th December | 2(1 blue fibre, 1 red fibre) |
| 11th December | 6(2 black fibres, 4 red fibres) |
| 19th December | 2(black fibres) |
| 2020 | 16th January | 0 |
| 28th January | 9(8 black frag, 1 black fibre) |
| 29th January | 0 |
| 24th February | 0 |
| 27TH February | 5(4 black fibres, 1 red fibre) |
| 28th July | 4(2 black fibres, 2 blue fibres) |
| 29th July | 0 |
| 30th July | 3(2 black fibres, 1 blue fibre) |
| 3rd August | 0 |
| 4th August | 0 |
| 5th August | 1(blue fibre) |
| 26th August | 4(2 blue fibres, 2 red fibres) |
| 27th August | 1(black fibre) |
| 2nd September | 2(black fibres) |
| 10th September | 0 |
| 26th October | 5(4 black fibres, 1 red fibre) |
| 27 October | 1(black fibre) |
| 3rd November | 4(blue fibres) |
| 11th November | 1(black fibre) |
| 18th November | 0 |
| 1st December | 0 |
| 2nd December | 2(1 black fibre, 1 blue fibre) |
| 2021 | 26th April | 16(4 blue fibres, 8 black fibres, 1 black fragment, 3 red fibres) |
| 29th April | 2(2 black fibres) |
| 5th May | 2(1 blue fibre, 1 red fibre) |
| 6th May | 1(Black fragment) |
| 15th June | 2(1 Black fibre, 1 red fibre) |
| 16th June | 4(2 blue fibres, 2 red fibres) |
| 20th June | 1(Black fibre) |
| 24th June | 2(Black fibres) |
| 28th June | 6(1 blue fibre, 5 black fibres) |
| 29th June | 4(3 blue fibres, 1 red fibre) |
| 2nd July | 2(1 blue fibre, 1 black fibre) |
| 6th July | 3(1 Black fibre, 2 red fibres) |
| 7th July | 3(2 black fibres, 1 blue fibre) |
| 8th July | 3(Black fibre, blue fibre, red fibre) |
| 12th July | 1(Black fibre) |
| 14th July | 3(2 Blue fibres, 1 black fibre) |

Supplementary Table 2 Contamination controls conducted from 2019-2021, including distilled water kept in 500ml bottles, as well as controls to test for possible contamination via the sampling equipment (bucket and Lamotte horizontal water sampler).

|  |  |  |  |
| --- | --- | --- | --- |
| Control | Microplastic per replicate | Mean MPT | Average length (mm) |
| Distilled water kept in 500mL bottles21/11/19 – 14/6/21 | 0 | 0 | - |
| 0 |
| 0 |
| 500mL distilled water passed through the sampler | 2 black fibres1 black particle | 1.3 | 1.57 |
| 0 |
| 1 black fibre |
| 500mL distilled water passed over the rope (sampler) | 3 blue fibre | 3 | 2.89 |
| 4 white fibre |
| 2 black |
| 500mL distilled water rope soak (sampler) | 1 black fibre1 blue fibre1 red fibre3 green fragments | 3.7 | 1.95 |
| 3 white fibres |
| 1 blue fibre |
| 500mL distilled water inside the bucket | 7 black fibres2 blue fibres2 pink fibres1 green fibre | 5.67 | 4.63 |
| 2 pink fibres1 black fibre2 blue fibres1 white fragment |
| 0 |  |
| 500mL distilled water passed over the rope (Bucket) | 0 | 1 | 2 |
| 1 black fibre1 orange fibre1 yellow fibre |
| 0 |
| 500mL distilled water rope soak (Bucket) | 1 blue fibre1 black fragment | 1.67 | 1.28 |
| 2 black fibres1 transparent fibre |
| 0 |