

# Detection of microplastics in human lung tissue

Jenner et al.

## Supplemental information.

Two Figures:

Figure S1. Overview of the procedural and laboratory blanks used to determine background contamination.

Figure S2.  $\mu$ FTIR spectral images of MP particles identified within human lung tissue samples. A, B, C and D = (A=PET) (B=PUR) (C=Resin) (D=PAN). E and F = MPs identified within blanks. (E=PS) (F=PP).

Two Tables:

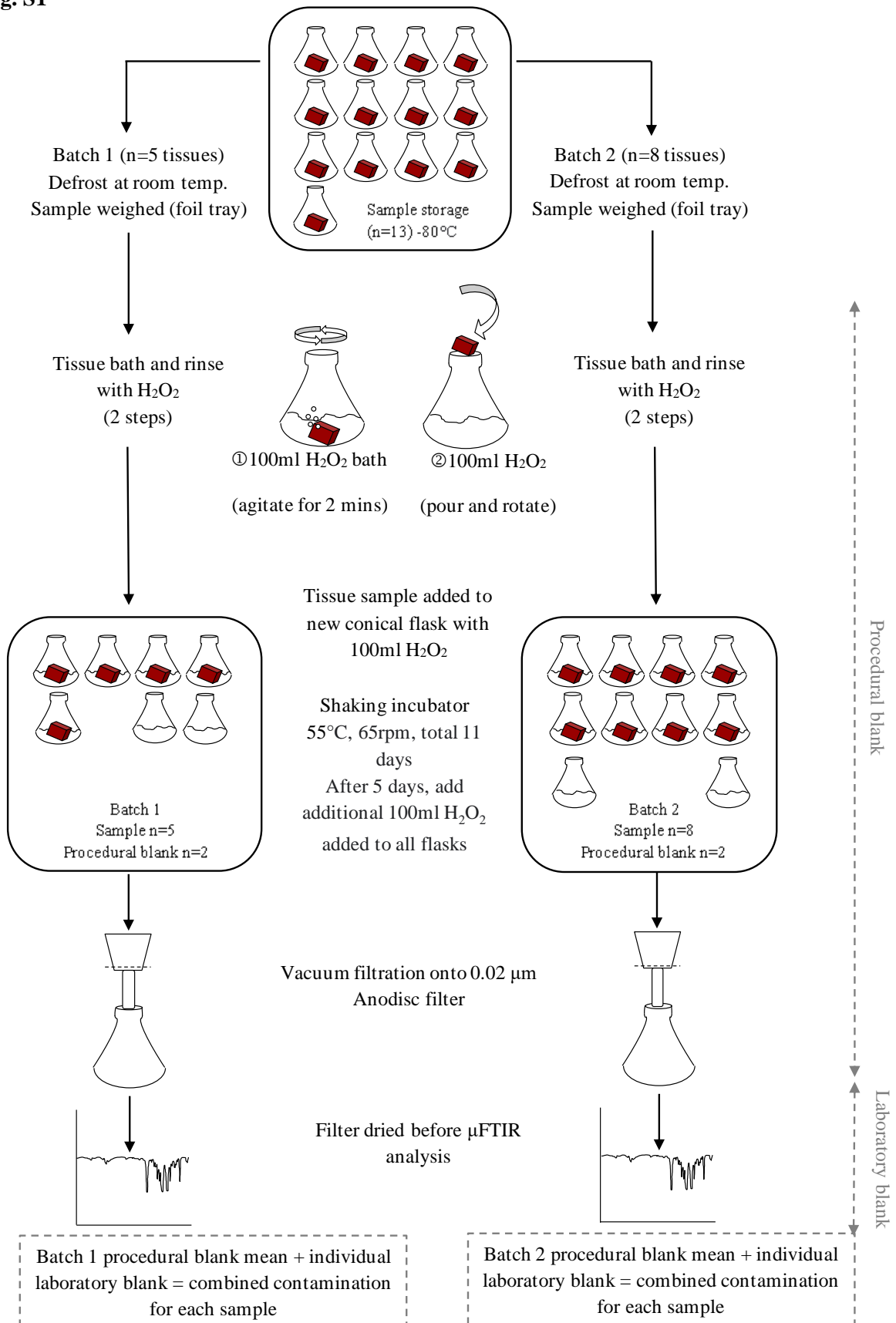
Table S1. Background levels of MP contamination detected in each sample and blank.

Table S2. MP results for lung region and gender, displayed in three formats; unadjusted raw data, subtraction adjusted data and LOD LOQ adjusted data.

One Methods:

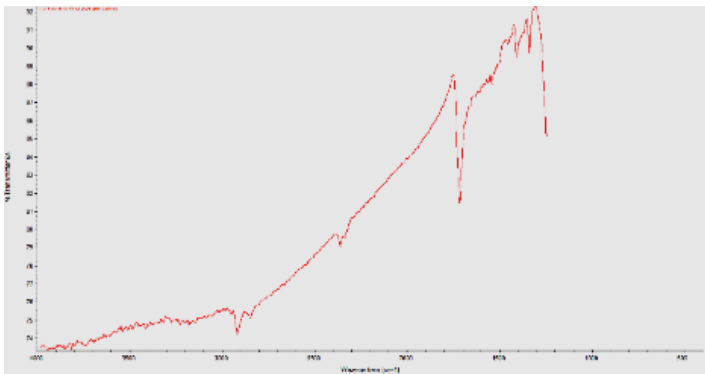
Methods S1. Contamination adjustment methods

Fig. S1

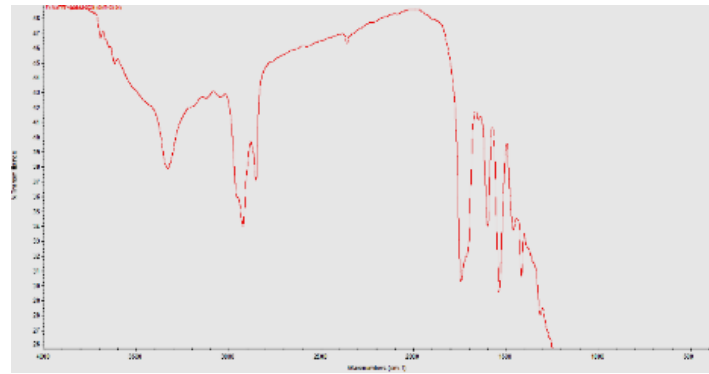


**Fig. S2**

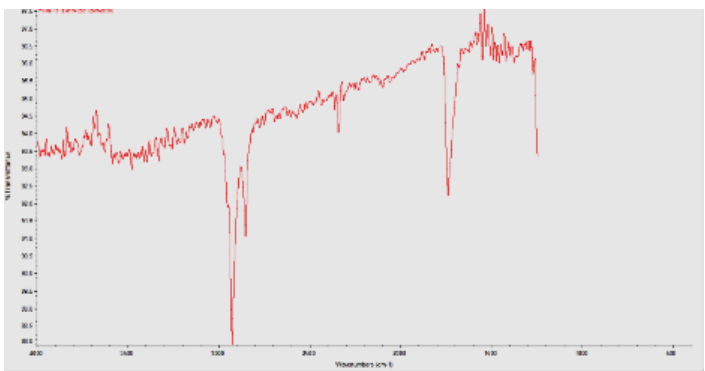
**A**



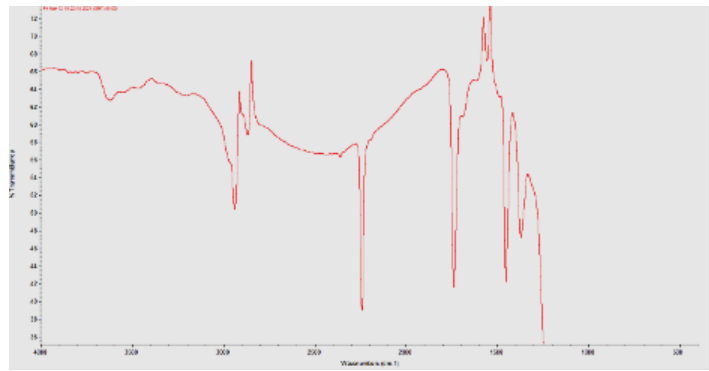
**B**



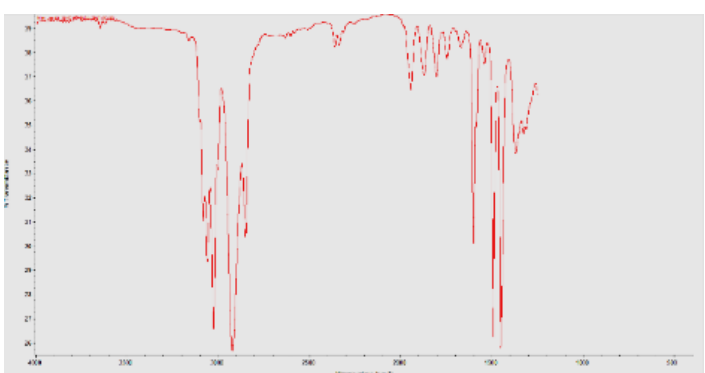
**C**



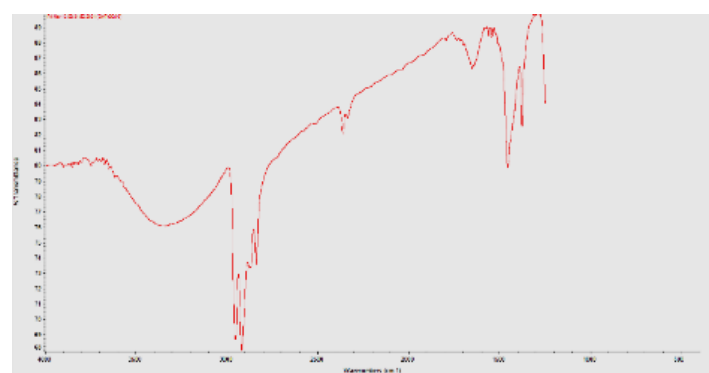
**D**



**E**



**F**



**Table S1**

<b>Procedural blank</b>	<b>No. of MPs</b>	<b>MP polymer</b>	<b>Length, width (µm)</b>	<b>Shape</b>
1	4	1 x PE 1 x PE/PP 1 x PS 1 x Res	144, 40 33, 19 50, 17 110, 68	Fibre Fragment Fragment Fragment
2	0	none detected	none detected	none detected
3	0	none detected	none detected	none detected
4	0	none detected	none detected	none detected
<b>Laboratory blank</b>		<b>MP polymer</b>	<b>Length, width (mm)</b>	<b>Shape</b>
1.1	0	none detected	none detected	none detected
1.2	2	1 x PS 1 x PTFE	161, 73 23, 22	Fragment Fragment
2.1	0	none detected	none detected	none detected
2.2	0	none detected	none detected	none detected
3.1	0	none detected	none detected	none detected
4.1	1	1 x PVA	315, 16	Fibre
5.1	0	none detected	none detected	none detected
6.1	1	1 x PET	43, 15	Film
7.1	1	1x PP	68, 40	Fragment
8.1	0	none detected	none detected	none detected
9.1	0	none detected	none detected	none detected
10.1	0	none detected	none detected	none detected
11.1	0	none detected	none detected	none detected
Total:	9			
Mean ±SD:	0.53±1.07			

**Table S2**

Category	Unadjusted MP/g of tissue	Subtraction adjusted MP/g of tissue	LOD LOQ adjusted MP/g of tissue
Upper lung tissue samples	0.80±0.96	0.23±0.28	0.00±0.00
Middle (left lingular) lung tissue samples	0.41±0.37	0.33±0.37	0.00±0.00
Lower lung tissue samples	3.12±1.30	1.65±0.88	0.49±0.97
Male samples	2.09±1.54	0.91±0.95	0.24±0.69
Female samples	0.36±0.50	0.33±0.52	0.00±0.00

## Methods SM1:

### *Contamination adjustment approach 1: Subtraction*

For each sample, the MPs identified within combined blanks were minimised from the total MPs identified within a sample.

E.g.

[A] Batch 1 procedural blank average MP	= 0.00
[B] Sample 4.1 laboratory blank MP	= 1.00
[C] Combined blank ([A]+[B])	= 1.00
[D] MPs identified in sample 4.1	= 2.00
[E] Subtraction adjustment ([D]-[C])	= 1.00
[F] Sample 4.1 tissue mass (g)	= 1.53
[G] MP/g ([E]/[F])	= 0.65

### *Contamination adjustment approach 2; Limits of Detection and Quantification*

The LOD LOQ adjustment applies a subtraction adjustment before a threshold for detection and quantification is calculated, but importantly takes into account polymer type.

[A] PE quantity identified in sample 3.1	= 2.00
[B] Mean $\pm$ SD of PE identified within entire combined blanks	= 0.19 $\pm$ 0.25
[C] Blank correction ([A]-[B])	= 1.81
[D] LOD (3xSD of [B]) or (1.1) – whichever value is higher	= 1.1
[E] LOQ (10xSD of [B]) or 3.3 – whichever value is higher	= 3.3

PE particles identified within sample 3.1 can only be detected if [C] > [D]

PE particles identified within sample 3.1 can only be quantified if [C] > [E]

Within sample 3.1, PE particles can be detected but not reliably quantified and therefore PE particles identified here are not included in the data or overall MP/g of human tissue values.