1 *Supplement of*

Per- and polyfluoroalkyl substances (PFAS) in particulate matter (PM$_{10}$) from activated sludge aeration

4 Jishnu Pandamkulangara Kizhakkethil et al.

5 *Correspondence to*: Ivan Kourtchev (ivan.kourtchev@coventry.ac.uk)

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

Contents

58   **Table S1** Per- and polyfluoroalkyl substances (PFAS) in the EPA 533 PAR mix (Wellington laboratories Inc, Canada)

PFAS analyte	Abbreviation
Perfluorobutanoic acid	PFBA
Perfluoropentanoic acid	PFPeA
Perfluorohexanoic acid	PFHxA
Perfluoroheptanoic acid	PFHpA
Perflurooctanoic acid	PFOA
Perfluorononanoic acid	PFNA
Perfluorodecanoic acid	PFDA
Perfluoroundecanoic acid	PFUDA
Perfluorododecanoic acid	PFDoA
Hexafluoropropylene oxide dimer acid	HFPO-DA
Perfluoro-3-methoxypropanoic acid	PFMPA
Perfluoro-4-methoxybutanoic acid	PFMBA
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA
Perfluorobuatne sulfonic acid	L-PFBS
Perfluoropentane sulfonic acid	L-PFPeS
Perfluorohexane sulfonic acid	PFHxS
Perfluoroheptane sulfonic Acid	L-PFHpS
Perfluorooctane Sulfonic Acid	PFOS
4:2 fluorotelomer sulfonate	4:2FTS
6:2 fluorotelomer sulfonate	6:2FTS
8:2 fluorotelomer sulfonate	8:2FTS
Sodium dodecafluoro-3H-4,8-dioxanonanoate	NaDONA
Perfluoro(2-((6-chlorohexyl)oxy)ethanesulfonic acid)	9Cl-PF3ONS
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OudS
Perfluoro (2-ethoxyethane)sulfonic acid	PFEESA

59

60

61

62

63

64

65 **Table S2** 16 ^{13}C labelled PFAS in the EPA 533 ES isotope dilution standard mix (Wellington laboratories Inc, Canada)

[13]C labelled PFAS	Abbreviation
Perfluorobutanoic acid, [13]C_4	MPFBA
Perfluorobutane sulfonic acid, [13]C_3	M3PFBS
Perfluoropentanoic acid, [13]C_5	M5PFPeA
4:2 fluorotelomer sulfonate, [13]C_2	M2-4:2FTS
Perfluorohexanoic acid, [13]C_5	M5PFHxA
Perfluoroheptanoic acid, [13]C_4	M4PFHpA
Perfluorohexane sulfonic acid, [13]C_3	M3PFHxS
Perflurooctanoic acid, [13]C_8	M8PFOA
6:2 fluorotelomer sulfonate, [13]C_2	M2-6:2FTS
Perfluorononanoic acid, [13]C_9	M9PFNA
Perfluorooctane sulfonic acid, [13]C_8	M8PFOS
Perfluorodecanoic acid, [13]C_6	M6PFDA
8:2 fluorotelomer sulfonate, [13]C_2	M2-8:2-FTS
Perfluoroundecanoic acid, [13]C_7	M7PFUdA
Hexafluoropropylene oxide, [13]C_3	M3HFPO
Perfluorododecanoic acid, [13]C_2	MPFDoA

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81 **Table S3** Concentrations of PFAS (pg m^{-3}) in the PM$_{10}$ samples (blank corrected) collected above the activated sludge (AS) tank in October

82 2023.

PFAS	\multicolumn{8}{c|}{PM$_{10}$ PFAS concentrations (pg m^{-3}) - October 2023}	Median (pg m^{-3})	Mean (pg m^{-3})

PFAS	2 October 2023		3 October 2023		4 October 2023		5 October 2023		Median (pg m^{-3})	Mean (pg m^{-3})
	Day	Night	Day	Night	Day	Night	Day	Night		
PFBA	CSB	CSB	CSB	13.78±0.71	19.60±0.77	10.38±0.80	14.53±0.64	15.24±0.83	12.08	9.19
PFBS	<LOD	0.24±0.01	0.34±0.03	0.35±0.02	0.34±0.03	0.33±0.02	0.43±0.04	0.55±0.01	0.34	0.32
PFHpA	<LOD	<LOD	<LOD	0.31±0.04	<LOD	0.28±0.05	<LOD	0.39±0.04	0.00	0.12
PFHxS	<LOD	<LOD	<LOD	0.15±0.01	<LOD	0.152±0.003	<LOD	0.18±0.01	0.00	0.06
PFOA	1.17±0.04	2.12±0.16	8.06±0.36	2.74±0.09	0.87±0.17	1.08±0.05	3.96±0.32	0.97±0.12	1.65	2.62
PFNA	0.95±0.11	1.32±0.01	<LOD	0.18±0.02	<LOD	0.25±0.03	<LOD	0.17±0.01	0.18	0.36
PFOS	12.48±0.51	17.35±0.15	0.72±0.03	0.81±0.02	0.44±0.07	1.79±0.07	0.71±0.03	1.14±0.04	0.98	4.43
PFDA	2.64±0.49	3.74±0.14	<LOD	0.24±0.02	<LOD	0.41±0.01	<LOD	0.29±0.02	0.26	0.91
∑PFAS									15.49	18.01

83 CSB- close to system blanks

84 LOD- Limit of detection

85

86

87

88

89

90

91

92   **Table S4** Concentrations of PFAS (pg m^{-3}) in the PM$_{10}$ samples (blank corrected) collected above the AS tank in March 2024.

PM$_{10}$ PFAS concentrations (pg m^{-3}) - March 2024										
PFAS	**4 March 2024**		**5 March 2024**		**6 March 2024**		**7 March 2024**		**Median (pg m^{-3})**	**Mean (pg m^{-3})**
	Day	**Night**	**Day**	**Night**	**Day**	**Night**	**Day**	**Night**		
PFBA	CSB	8.04±0.38	CSB	6.54±0.64	CSB	7.13±0.15	CSB	8.75±0.86	3.27	3.81
PFBS	ND	0.149±0.005	0.03±0.01	0.20±0.01	ND	0.21±0.01	ND	0.17±0.02	0.09	0.09
PFHpA	<LOD	0.22±0.02	<LOD	0.23±0.02	<LOD	0.26±0.03	<LOD	<LOD	0.00	0.09
PFHxS	<LOD	0.19±0.02	<LOD	0.20±0.02	<LOD	0.20±0.01	<LOD	0.12±0.01	0.06	0.09
PFOA	<LOD	1.62±0.13	<LOD	1.70±0.01	<LOD	1.21±0.07	<LOD	0.51±0.02	0.26	0.63
PFNA	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0	0
PFOS	<LOD	0.56±0.04	0.58±0.04	0.66±0.05	0.76±0.02	0.56±0.02	0.61±0.03	0.312±0.001	0.57	0.51
PFDA	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0	0
∑PFAS									4.25	5.22

93   CSB- close to system blanks

94   ND- Not detected

95   LOD- Limit of detection

96

97

98

99

100

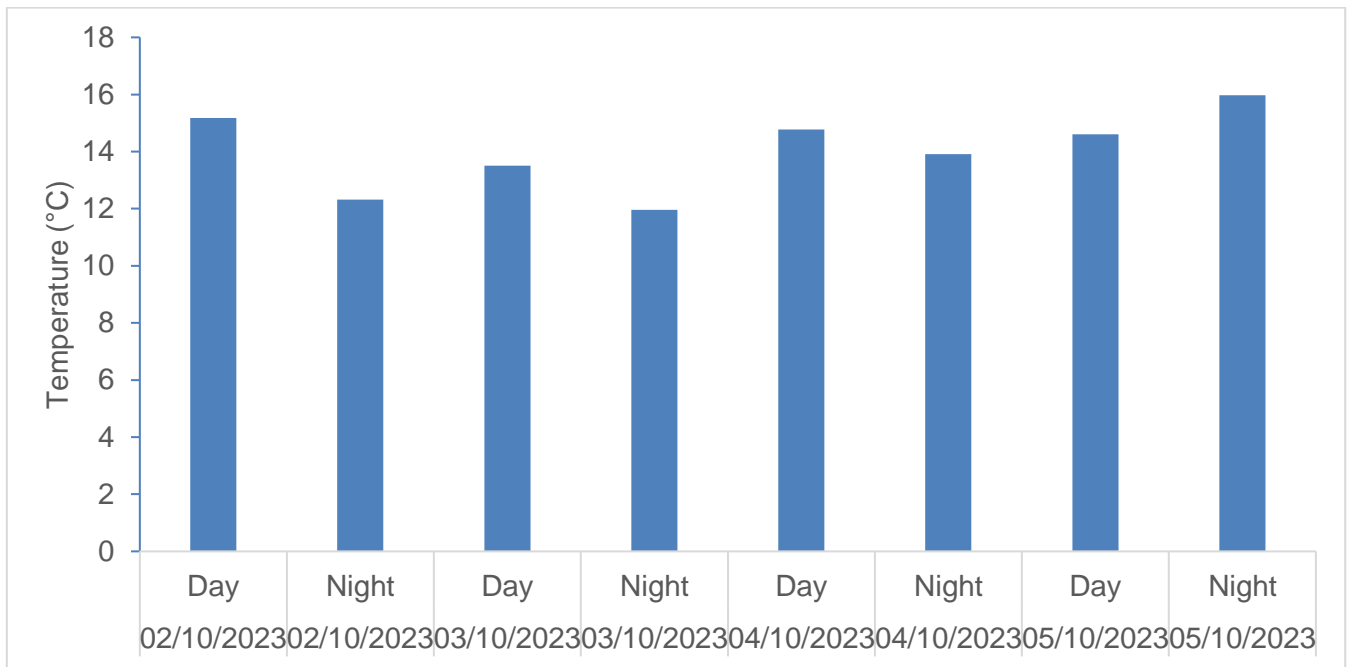



Figure S1 Average temperature (°C) during the sampling periods in October 2023. The data was obtained from ERA5-Land reanalysis data set. (https://cds.climate.copernicus.eu/cdsapp#!/dataset/reanalysis-era5-land?tab=overview)

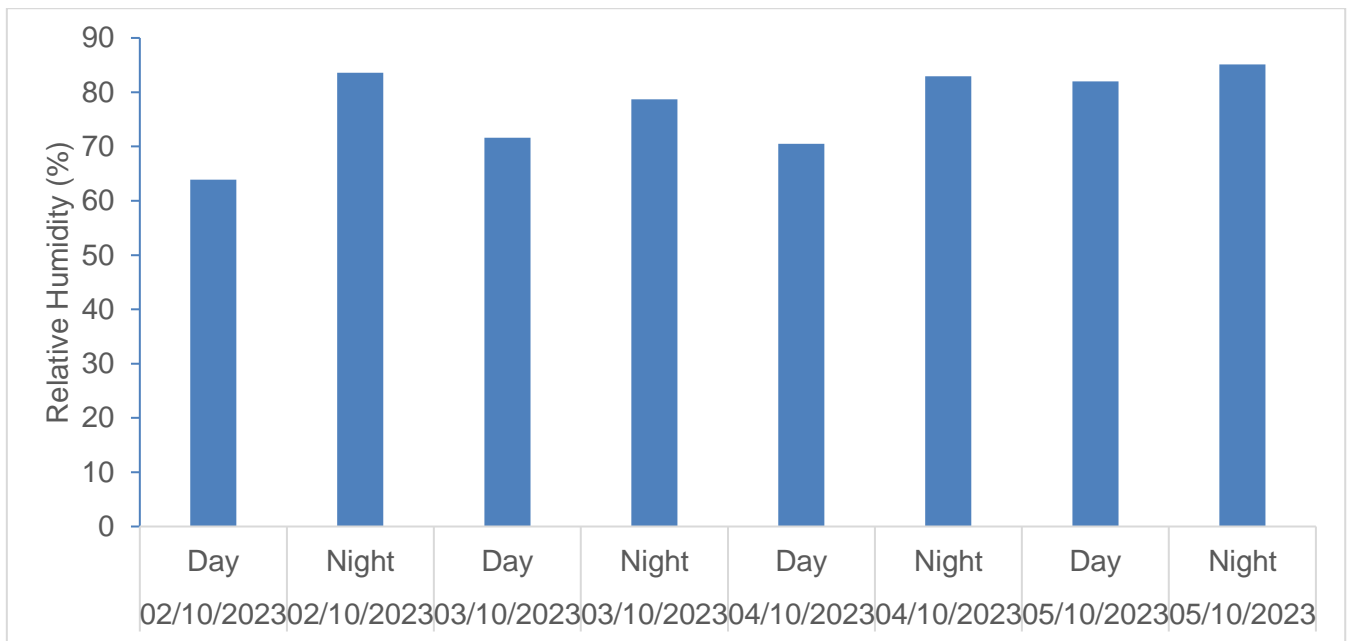
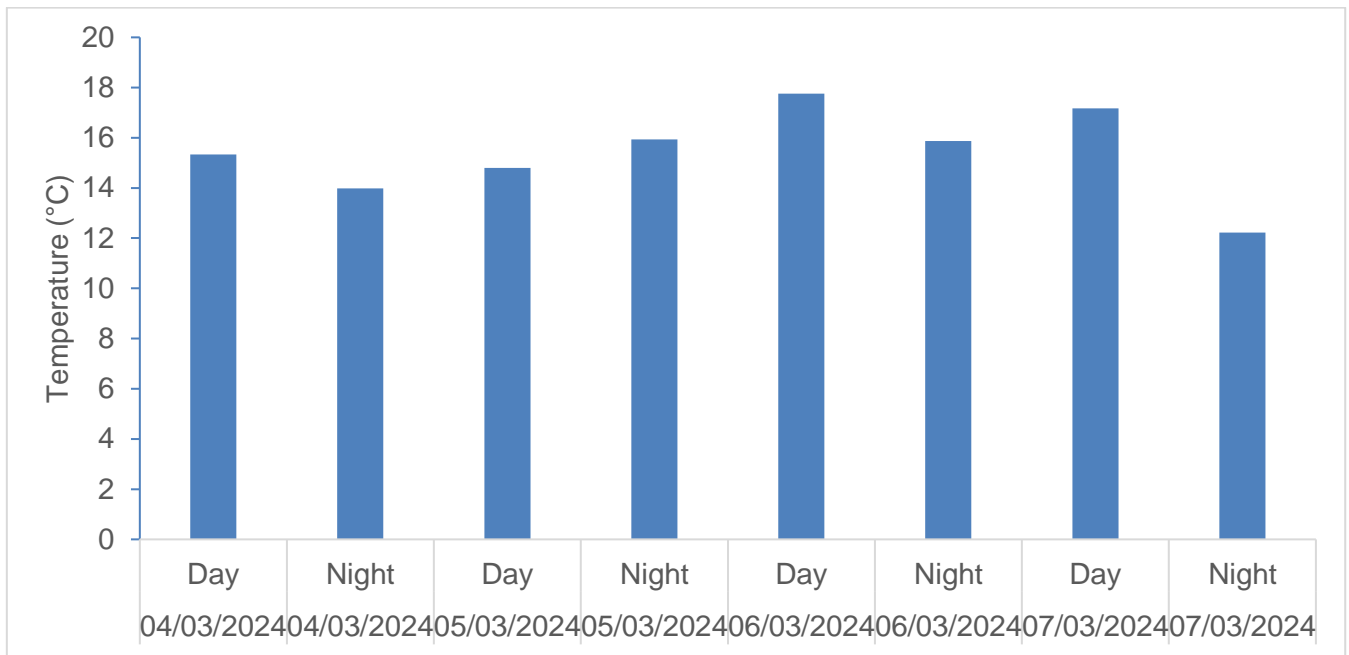
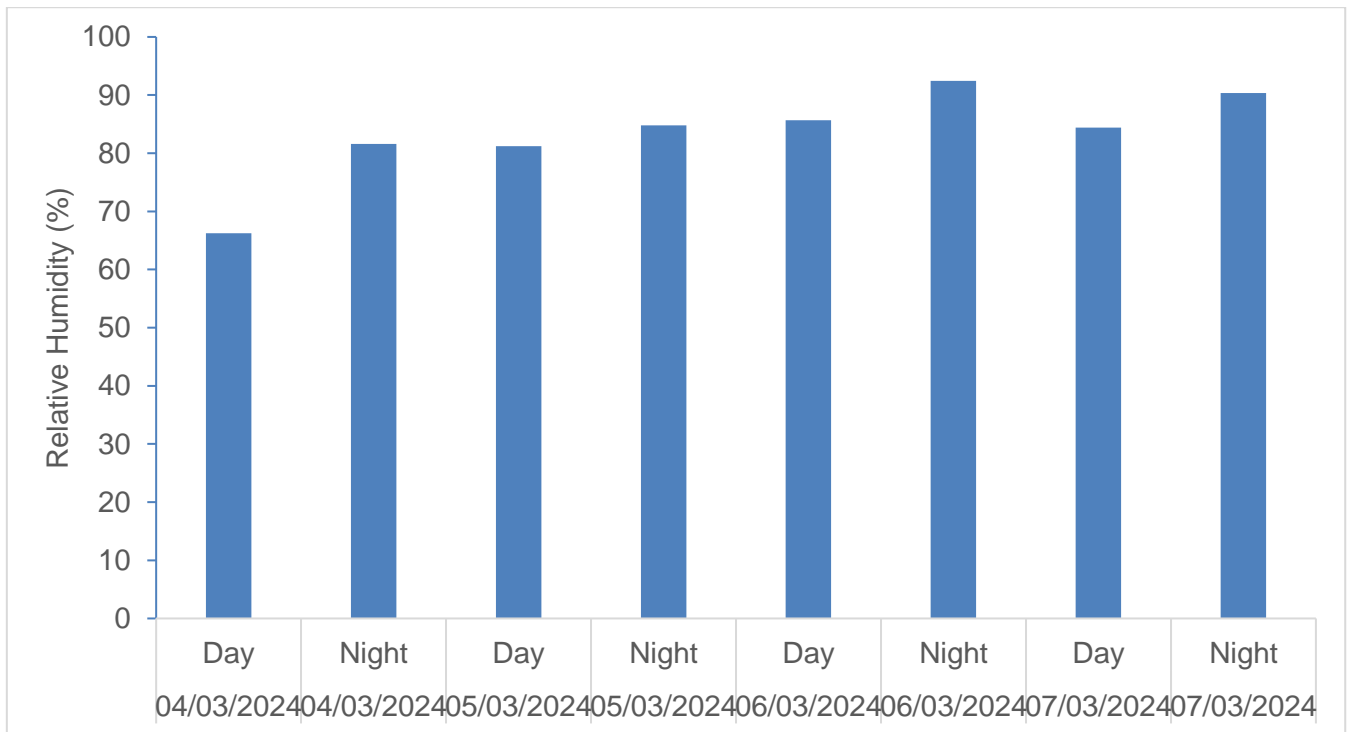



Figure S2 Average relative humidity (%) during the sampling periods in October 2023. The data was obtained from ERA5-Land reanalysis data set. (https://cds.climate.copernicus.eu/cdsapp#!/dataset/reanalysis-era5-land?tab=overview)

108

109 **Figure S3** Average temperature (°C) during the sampling periods in March 2024. The data was obtained from ERA5-Land

110 reanalysis data set. (https://cds.climate.copernicus.eu/cdsapp#!/dataset/reanalysis-era5-land?tab=overview)

111

112

113   **Figure S4** Average relative humidity (%) during the sampling periods in March 2024. The data was obtained from ERA5-

114   Land reanalysis data set. (https://cds.climate.copernicus.eu/cdsapp#!/dataset/reanalysis-era5-land?tab=overview)

115