

Supplementary material

Table S1.
Characteristics of the healthcare and care facilities

Variables	Medical offices (n = 2)		Dental offices (n = 2)		Pharmacies (n = 2)		Nursing homes (n = 4)	
	Mean \pm SE or count	Min/Max or %	Mean \pm SE or count	Min/Max or %	Mean \pm SE or count	Min/Max or %	Mean \pm SE or count	Min/Max or %
Area								
Suburban	0	0	1	50	0	0	1	25
Urban	2	100	1	50	2	100	3	75
Neighbourhood								
Commercial	0	0	0	0	2	100	0	0
Park and forest	0	0	0	0	0	0	1	25
Residential	2	100	2	100	0	0	3	75
Outside hazards sources								
Car park	1	50	1	50	2	100	1	25
Laundry	0	0	0	0	1	50	0	0
Major road	2	100	1	50	1	50	2	50
River	1	50	0	0	0	0	0	0
Service station	0	0	0	0	2	100	0	0
Hazards sources in the sampled rooms								
Cleansing products	2	100	2	100	2	100	4	100
Cooking appliance	0	0	0	0	1	50	2	50
Fabric curtains	1	50	0	0	0	0	3	75
Plant	1	50	0	0	0	0	0	0
Printer	1	50	1	50	2	100	0	0
Construction year								
< 1950	1	50	1	50	0	0	1	25
1950-2000	1	50	1	50	2	100	2	50
> 2000	0	0	0	0	0	0	1	25
Heating system								
Electricity	0	0	2	100	2	100	0	0
Gas	2	100	0	0	0	0	3	75
Hot water	0	0	0	0	0	0	1	25
Cooling system								
Air conditioner	0	0	1	50	2	100	3	75
Surface (m²) of the sampled rooms								
Bedrooms	-	-	-	-	-	-	24 \pm 2	20/30
Common rooms	-	-	-	-	-	-	161 \pm 35	45/226
Commercial spaces	-	-	-	-	93 \pm 23	70/117	-	-

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Consulting rooms	24 ± 1	23/25	21 ± 3	18/24	-	-	-	-
Sterilization room	-	-	6 ± 0	6/6	-	-	-	-
Storage rooms	-	-	-	-	145 ± 65	80/210	-	-
Waiting rooms	10 ± 1	9/11	19 ± 0	19/19	-	-	-	-
Volume (m ³) of the sampled rooms								
Bedrooms	-	-	-	-	-	-	60 ± 4	50/74
Common rooms	-	-	-	-	-	-	510 ± 116	113/672
Commercial spaces	-	-	-	-	258 ± 49	189/328	-	-
Consulting rooms	65 ± 2	63/68	47 ± 4	42/53	-	-	-	-
Sterilization room	-	-	13 ± 0	13/13	-	-	-	-
Storage rooms	-	-	-	-	382 ± 145	176/587	-	-
Waiting rooms	25 ± 2	23/27	42 ± 0	42/42	-	-	-	-
Ventilation in the sampled rooms								
Mechanical	0	0	1	50	0	0	4	100
Natural	2	100	1	50	2	100	0	0
Windows	2	100	2	100	1	50	4	100
Flow rate of mechanical ventilation (m ³ /h)								
Bedrooms	-	-	-	-	-	-	25 ± 12	9/53
Common rooms	-	-	-	-	-	-	198 ± 154	42/572
Consulting rooms	-	-	17 ± 0	17/17	-	-	-	-
Waiting rooms	-	-	32 ± 0	32/32	-	-	-	-
Flow rate of mechanical ventilation (vol/h)								
Bedrooms	-	-	-	-	-	-	0.4 ± 0.2	0.2/1.0
Common rooms	-	-	-	-	-	-	0.4 ± 0.2	0.1/1.0
Consulting rooms	-	-	0.3 ± 0.0	0.3/0.3	-	-	-	-
Waiting rooms	-	-	0.8 ± 0.0	0.8/0.8	-	-	-	-
Floors in the sampled rooms								
PVC	1	50	2	100	0	0	3	75
PVC + Tiles	0	0	0	0	1	50	0	0
PVC + carpet + parquet	0	0	0	0	0	0	1	25
Tiles	1	50	0	0	1	50	0	0
Walls in the sampled rooms								
Paint	2	100	2	100	2	100	3	75
Paint + wallpaper	0	0	0	0	0	0	1	25

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Table S2.

Median concentrations ($\mu\text{g}/\text{m}^3$) of volatile organic compounds (VOCs) in sampled rooms of healthcare and care facilities during summer (S) and winter (W)

VOCs	Medical offices (n = 2)						Dental offices (n = 2)				Pharmacies (n = 2)				Nursing homes (n = 4)			
	Waiting rooms		Consulting rooms		Waiting room		Sterilization room		Consulting rooms		Commercial spaces		Storage rooms		Common rooms		Bedrooms	
	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W
Aromatic hydrocarbons																		
Benzene	<1.4	<1.3	<1.3	<1.3	<1.7	<1.1	<1.4	<1.2	<2.9	<1.5	<1.3	<1.5	<1.3	<1.2	<1.3	<1.3	<1.4	<1.3
Ethylbenzene	0.2	<0.2	0.2	0.3	0.3	0.2	0.4	0.3	13.7	0.3	0.7	1.2	0.6	1.9	<0.2	0.4	<0.3	1.0
Styrene	0.2	0.2	0.2	0.2	0.3	<0.2	0.9	0.4	1.8	0.4	1.8	0.6	1.6	0.6	<0.2	<0.2	<0.2	0.3
Toluene	0.3	1.0	0.4	1.8	0.5	1.1	1.7	2.4	2.2	1.9	3.2	2.8	2.6	2.9	0.4	2.1	1.3	1.2
o-Xylene	0.2	0.3	0.3	0.4	0.3	0.2	0.2	0.4	4.3	0.3	0.6	0.9	0.5	0.8	<0.2	0.6	0.3	1.3
mp-Xylenes	0.5	0.7	0.5	0.8	0.7	0.5	0.6	0.8	10.9	0.7	1.3	2.2	1.0	2.3	<0.4	1.3	0.7	3.0
1,2,4-Trimethylbenzene	0.2	0.3	0.3	0.4	0.3	<0.2	0.3	0.6	1.0	0.5	0.6	0.6	0.4	0.4	<0.2	<0.2	<0.2	0.4
Naphthalene	<0.2	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	0.3	<0.5	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Phenol	<0.6	0.5	<0.6	0.7	<0.7	0.5	1.7	1.6	1.9	1.4	1.0	0.8	1.1	0.6	<0.6	0.6	<0.6	0.9
Aliphatic hydrocarbons																		
n-Decane	0.2	0.3	0.2	0.4	0.3	0.4	<0.2	0.3	0.5	0.4	1.3	0.9	1.9	1.0	<0.2	0.5	<0.2	0.8
n-Heptane	<0.2	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	0.3	<0.5	0.4	<0.2	0.6	<0.2	0.5	<0.2	0.3	<0.2	0.4
n-Undecane	<0.2	0.6	<0.2	1.5	<0.3	0.4	0.5	0.6	0.8	0.8	1.5	1.3	2.8	1.6	<0.2	0.2	0.2	0.4
Halogenated hydrocarbons																		
1,1,1-Trichloroethane	<0.6	<0.5	<0.6	<0.6	<0.7	<0.4	<0.5	<0.5	<1.2	<0.6	<0.5	<0.6	<0.5	<0.5	<0.6	<0.6	<0.6	<0.5
1,4-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethylene	<0.2	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tetrachloroethylene	<0.2	<0.2	<0.2	<0.2	<0.3	<0.2	1.9	3.2	1.5	1.7	0.6	2.9	0.6	1.3	<0.2	<0.2	<0.2	<0.2
Trichloromethane	<0.2	<0.2	<0.2	<0.2	<0.3	0.4	0.3	0.3	<0.5	0.4	<0.2	<0.3	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane	<0.2	<0.2	<0.2	<0.2	<0.3	<0.4	<0.2	<0.2	<0.5	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromochloromethane	<0.2	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tribromomethane	<0.2	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Alcohols																		
2-Ethyl-1-hexanol	<5.5	<5.3	<5.3	<5.4	<6.7	<4.4	9.6	11.0	18.1	9.4	6.5	5.8	9.0	<4.7	<5.2	<5.4	<5.5	<5.1
Phenoxyethanol	<5.5	<5.3	<5.3	<5.4	<6.7	<4.4	<5.4	<4.8	<11.6	<5.8	6.5	<5.8	7.4	<4.7	<5.2	<5.4	<5.5	<5.1
Ethanol	37.1	132.0	297.8	402.1	>665.9	>442.3	261.9	>482.0	669.0	>583.0	96.4	542.0	274.1	674.3	165.8	381.2	409.3	642.3
Isopropanol	<1.6	<1.3	>28.4	52.9	>66.6	>44.2	42.0	>48.2	73.9	>58.3	10.1	33.5	14.7	31.7	4.9	19.8	19.2	20.4
n-Propanol	<1.1	<1.1	<1.1	<1.1	<1.3	1.0	22.7	>96.4	17.5	>58.0	2.2	1.5	2.8	1.3	<1.1	<1.1	<1.1	<1.1
Ketones																		
Acetone	<1.1	26.1	20.1	40.1	23.2	>88.5	5.9	109.4	4.9	>116.6	10.4	34.2	11.4	24.1	3.0	22.7	7.8	31.6
2-Butanone	<1.1	<1.1	<1.1	<1.1	<1.3	12.6	<1.1	<1.0	<2.3	8.3	<1.1	<1.4	<1.1	<0.9	<1.1	<1.1	<1.1	<1.1

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Terpenes																		
Limonene	0.2	1.4	0.3	3.8	0.5	4.0	21.6	18.7	33.8	15.3	13.7	11.6	>15.3	10.8	1.3	3.4	3.3	3.6
Ethers																		
Ether	<0.6	<0.5	<0.6	<0.6	<0.7	0.6	<0.5	<0.5	<1.2	<0.6	0.7	1.9	4.1	9.6	<0.6	<0.6	<0.6	<0.5
2-Ethoxyethanol	<5.5	<5.3	<5.3	<5.4	<6.7	<4.4	<5.4	<4.8	<11.6	<5.8	<5.3	<5.8	<5.3	<4.7	<5.2	<5.4	<5.5	<5.1
2-Butoxyethanol	<5.5	<5.3	<5.3	<5.4	<6.7	<4.4	<5.4	<4.8	<11.6	<5.8	<5.3	<5.8	<5.3	<4.7	<5.2	<5.4	<5.5	<5.4
Peroxides																		
Hydrogen peroxide	11.7	8.0	<7.6	<7.9	8.7	11.4	24.9	<11.1	7.2	9.5	8.8	<8.7	<7.5	<10.4	<8.3	<8.2	<7.9	<8.0
Aldehydes																		
Formaldehyde	23.3	10.5	38.1	24.8	4.3	8.1	29.9	14.1	18.8	13.1	27.9	10.3	29.8	13.7	10.4	5.0	18.2	11.4
Acetaldehyde	4.5	4.5	5.5	7.3	2.1	6.6	23.1	9.2	13.7	10.7	12.4	6.0	13.1	7.2	5.7	4.4	5.0	7.0
Propionaldehyde	0.7	0.5	1.1	1.0	0.3	0.5	2.7	2.1	1.4	0.9	2.1	0.8	2.1	1.1	0.8	0.6	0.8	0.7
Butyraldehyde	0.9	0.6	1.4	0.8	0.5	0.7	1.1	0.8	0.9	0.8	2.0	0.7	1.8	0.9	1.0	0.8	1.2	0.9
Isovaleraldehyde	0.3	0.4	0.5	0.3	0.2	0.5	1.3	0.6	0.7	0.9	4.7	0.6	3.5	0.8	0.5	0.3	0.5	0.4
Valeraldehyde	0.7	0.4	1.3	0.3	<0.2	0.4	0.9	0.7	0.6	0.6	1.3	0.6	0.9	0.8	0.5	0.3	0.7	0.5
Hexaldehyde	1.5	0.9	4.2	2.5	0.4	1.5	3.2	2.2	2.0	2.3	8.5	2.1	9.0	3.0	2.3	1.1	2.0	1.8

Notes: “<” indicates a median concentration below the limit of quantification; **bold** numbers indicate a median concentration greater than the limit of quantification;
“>” indicates a median concentration greater than the high limit of quantification

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Table S3.
Median concentrations (ng/m³) of semi-volatile organic compounds (SVOCs)
in sampled rooms of healthcare and care facilities during summer (S) and winter (W)

SVOCs	Medical offices (n = 2)				Dental offices (n = 2)				Pharmacies (n = 2)				Nursing homes (n = 4)					
	Waiting rooms		Consulting rooms		Waiting room		Sterilization room		Consulting rooms		Commercial spaces		Storage rooms		Common rooms		Bedrooms	
	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W
Phthalates																		
DEHP	55.0	20.5	39.0	19.5	<16.0	18.0	41.0	27.0	24.0	26.0	27.0	<17.0	16.0	<17.5	24.0	17.5	69.0	40.5
DEP	342.5	235.5	695.0	485.0	51.0	130.0	450.0	230.0	217.0	205.0	310.0	185.0	220.0	110.0	250.0	265.0	605.0	660.0
DBP	121.0	62.0	165.0	87.5	25.0	53.0	89.0	46.0	86.5	59.5	118.5	32.0	65.5	28.5	73.0	60.5	125.0	93.5
DiBP	245.0	170.0	390.0	235.0	95.0	250.0	1200.0	660.0	585.0	430.0	335.0	155.0	325.0	150.0	285.0	215.0	550.0	400.0
BBP	86.5	42.0	93.0	59.0	<16.0	<17.0	<19.0	<18.0	<16.0	<17.0	<16.5	<17.0	<15.5	<17.5	<17.0	<17.5	<17.0	<17.5
DiNP	38.5	39.5	39.5	55.0	<16.0	56.0	29.0	23.0	26.0	44.0	<16.5	<17.0	<17.5	<17.5	<17.5	20.0	17.0	31.5
Musk																		
Tonalide	20.2	17.8	31.0	20.6	25.0	13.0	54.0	34.0	27.5	19.5	163.5	45.5	41.5	16.0	19.0	21.5	21.5	29.0
Galaxolide	182.0	136.5	360.0	370.0	0.4	51.0	240.0	110.0	163.5	95.0	555.0	240.0	205.0	111.5	104.5	134.0	162.5	160.0
Pyrethroids																		
Cyfluthrine	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.5
Cypermethrine	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.7	<0.7	<0.6	<0.6	<0.6	<0.6	<0.6	<0.7	<0.6	<0.6	<0.6	<0.7
Deltamethrine	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Permethrine	<1.1	<1.1	<1.1	<1.1	<1.0	<1.1	<1.2	<1.2	<1.0	<1.0	<1.1	<1.1	<1.1	<1.2	<1.1	<1.1	<1.1	<1.1
Tetramethrine	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Notes: “<” indicates a median concentration below the limit of quantification; **bold** numbers indicate a median concentration greater than the limit of quantification
DEHP = di(2-ethylhexyl)phthalate; DEP = diethylphthalate; DBP = dibutylphthalate; DiPB = diisobutylphthalate; BBP = benzylbutylphthalate; DiNP = diisononylphthalate

Supplementary material

Table S4.

Bacteria isolated from air and surfaces in sampled rooms of healthcare and care facilities during summer (S) and winter (W)

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[illegible]

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Gram-negative bacilli				
<i>Brevundimonas diminuta</i>	+		+	+
<i>Brevundimonas vesicularis</i>			+	
<i>Chryseobacterium</i> spp.		+		
<i>Citrobacter freundii</i>				+
<i>Delftia acidivorans</i>				+
<i>Empedobacter brevis</i>		+		
<i>Enterobacter cloacae</i>			+	
<i>Enterobacter sakazakii</i>		+		
<i>Escherichia vulneris</i>				+
<i>Erwinia billingiae</i>			+	+
<i>Erwinia</i> spp.			+	
<i>Myroides</i> spp.		+		
<i>Ochrobactrum grignonense</i>				+
<i>Rhizobium radiobacter</i>	+			
<i>Sphingomonas paucimobilis</i>	+		+	

Notes: “+” indicates the presence of an identified bacterial specie or genus in the sampled rooms; “*” indicates an antibiotic resistance of bacteria

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Table S5.
Fungi isolated from air and surfaces in sampled rooms of healthcare and care facilities during summer (S) and winter (W)

Fungi	Medical offices (n = 2)				Dental offices (n = 2)				Pharmacies (n = 2)				Nursing homes (n = 4)					
	Waiting rooms		Consulting rooms		Waiting room		Sterilization room		Consulting rooms		Commercial spaces		Storage rooms		Common rooms		Bedrooms	
	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W
Filamentous fungi																		
<i>Acremonium</i> spp.																		
<i>Alternaria</i> spp.		+	+		+			+			+					+		
<i>Aspergillus europaeus</i>																	+	
<i>Aspergillus fumigatus</i>	+	+			+	+		+			+		+		+	+		
<i>Aspergillus holandicus</i>	+															+		+
<i>Aspergillus niger</i>											+					+		
<i>Aspergillus ochraceus</i>		+						+								+		
<i>Aspergillus</i> spp.		+			+	+							+	+				+
<i>Aspergillus tubingensis</i>					+													
<i>Aspergillus versicolor</i>								+			+					+		
<i>Botryomyces caespitosus</i>					+													
<i>Botrytis</i> spp.											+							
<i>Brachycladium papaveris</i>																+		
<i>Chaetomium</i> spp.		+						+								+		+
<i>Chrysomyia</i> spp.													+					
<i>Cladosporium</i> spp.	+	+	+		+		+	+	+	+	+	+	+	+	+	+	+	+
<i>Cryptococcus diffluens</i>													+					
<i>Engyodontium album</i>											+							
<i>Eurotium herbarorium</i>		+					+		+		+					+		
<i>Fusarium</i> spp.		+																
<i>Mucor</i> spp.	+										+		+		+		+	
<i>Penicillium chrysogenum</i>																+		+
<i>Penicillium</i> spp.	+	+	+	+		+	+	+		+	+	+	+	+	+	+	+	+
Phylum Basidiomycota	+	+					+		+	+	+		+		+	+	+	+
<i>Rhizopus</i> spp.											+				+	+		+
<i>Trichoderma</i> spp.																		+
Yeasts																		
<i>Candida zeylanoides</i>											+							
<i>Rhodoturola mucilaginosa</i>																+		
<i>Rhodotorula</i> spp.	+						+			+		+						
Other Yeasts		+					+			+	+	+		+	+	+		

Notes: “+” indicates the presence of an identified fungal specie or genus in the sampled rooms