SUPPLEMENTARY INFORMATION

Concentrations and isomer profiles of hexabromocyclododecanes (HBCDDs) in floor, elevated surface, and outdoor dust samples from Basrah, Iraq.

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Electronic supporting information contains:

Table S1: Characteristics of the sampled homes

Home	Location	Construction	Electronics*	Foam**	Polystyrene foam boards	Ventilation***	Floor	Car Parking in outdoor
H-1	side road	1983	4	11	No	Ac	carpet	no
H-2	main road	2010	4	5	Yes	Ac+ Natural	Ceramic tiles	Car parking
H-3	>20m from the main road	2006	3	6	No	Ac+ Natural	Terrazzo tiles	no
H-4	side road	2013	3	5	No	Ac+ Natural	Ceramic tiles	no
H-5	main road	1964	4	10	No	Ac+ Natural	rubber tile	Car parking
H-6	side road	1996	2	11	No	Ac	Ceramic tiles	Car parking
H-7	side road	1993	6	7	No	Ac	Terrazzo tiles	no
H-8	main road	2002	4	15	No	Ac+ Natural	carpet	Car parking
H-9	main road	2002	3	14	Yes	Ac	Ceramic tiles	Car parking
H-10	>30m from the main road	1998	2	13	No	Ac+ Natural	Ceramic tiles	Car parking
H-11	side road	1998	7	14	No	Ac+ Natural	Terrazzo tiles	Car parking
H-12	>15m from the main road	1998	6	6	No	Ac+ Natural	Terrazzo tiles	no
H-13	side road	2007	3	11	Yes	Ac+ Natural	Terrazzo tiles	no
H-14	>20m from the main road	1964	4	12	No	Ac+ Natural	Ceramic tiles	Car parking
H-15	>30m from the main road	2005	2	5	No	Ac+ Natural	Stone Ceramic tile	no
H-16	>20m from the main road	2002	3	8	No	Ac+ Natural	PVC Vinyl Flooring plastic	no
H-17	side road	2000	3	7	No	Ac+ Natural	Ceramic tiles	Car parking
H-18	side road	1986	6	10	No	Ac+ Natural	Terrazzo tiles	no
H-19	main road	1995	7	8	No	Ac	PVC Vinyl Flooring plastic	Car parking
H-20	>20m from the main road	2013	5	4	No	Ac+ Natural	Ceramic tiles	Car parking

* = (television, satellite, remount control, laptop, tablet, gaming devices, stereo music systems, and Wi-Fi)

** = (sofa seat, cushion and foam chair)

*** Ac= air condition, natural= ventilation (through windows and doors

Table S2: Limit of detection (LOD), Limit of quantification (LOQ) values for HBCDDs

HBCDD Stereoisomer	LOD (ng/g)	LOQ (ng/g)
α- HBCDD	0.4	1.33
B- HBCDD	0.39	1.31
ɣ- HBCDD	0.31	1.04

Table S3. Concentrations of HBCDDs in NIST SRM 2585 (ng /g) compared to indicative values (Keller et al., 2007)

HBCDD Stereoisomer	Measured Concentration (Average± SD) n=6	Indicative Concentration (Average± SD)
α-HBCDD	21± 3.6	19 ± 3.7
β-HBCDD	5.1 ± 1.6	4.3 ± 1.1
γ-HBCDD	131 ± 16	120 ± 22

Table S4. Concentrations of HBCDDs in elevated surface dust (ESD) samples (ng/g) from Basrah, Iraq

ESD					
Home	**α-HBCDD**	**β-HBCDD**	**ɣ-HBCDD**	**ΣHBCDDs**	**α-/ɣ-HBCDD**
H1	34.4	4.6	29.1	68.1	1.2
H2	102.2	13.0	32.6	147.8	3.1
H3	15.9	10.0	12.2	38.1	1.3
H4	58.4	11.5	24.3	94.2	2.4
H5	24.7	<LOD	17.5	42.7	1.4
H6	47.4	<LOD	15.1	63.1	3.1
H7	22.4	7.9	16.1	46.4	1.4
H8	<LOD	<LOD	30.7	31.9	0.0
H9	41.2	<LOD	32.1	73.9	1.3
H10	37.9	7.4	12.7	58.0	3.0
H11	75.3	6.7	38.3	120.2	2.0
H12	38.4	8.7	22.1	69.2	1.7
H13	57.2	17.2	36.5	110.9	1.6
H14	36.4	<LOD	25.3	62.3	1.4
H15	<LOD	9.6	11.6	21.8	0.1
H16	17.5	<LOD	15.6	33.7	1.1
H17	<LOD	7.0	9.2	16.8	0.1
H18	59.0	12.6	39.2	110.7	1.5
H19	31.0	6.9	16.0	54.0	1.9
H20	28.4	6.3	10.1	44.8	2.8

Table S5. Concentrations of HBCDDs in floor dust (FD) samples (ng/g) from Basrah, Iraq

FD					
Home	**α-HBCDD**	**β-HBCDD**	**γ-HBCDD**	**ΣHBCDDs**	**α-/γ-HBCDD**
H1	<LOD	<LOD	9.6	10.8	0.1
H2	54.1	8.3	40.3	102.6	1.3
H3	<LOD	3.1	5.7	9.4	0.1
H4	49.3	11.7	26.7	87.7	1.9
H5	15.4	<LOD	4.5	20.5	3.4
H6	45.6	17.4	28.8	91.8	1.6
H7	9.5	4.5	6.3	20.3	1.5
H8	<LOD	9.3	11.9	21.8	0.1
H9	33.2	9.6	22.6	65.4	1.5
H10	23.9	<LOD	13.7	38.2	1.7
H11	63.6	11.8	41.0	116.4	1.6
H12	22.2	9.9	12.4	44.5	1.8
H13	24.3	4.1	18.5	46.8	1.3
H14	26.6	7.9	19.9	54.3	1.3
H15	<LOD	<LOD	4.1	5.3	0.1
H16	24.0	6.7	12.2	42.8	2.0
H17	11.1	3.4	5.7	20.2	1.9
H18	31.6	2.5	20.5	54.6	1.5
H19	20.1	7.2	9.2	36.5	2.2
H20	22.2	6.0	8.8	37.1	2.5

Table S6. Concentrations of HBCDDs in outdoor dust (OD) samples (ng/g) from Basrah, Iraq

OD					
Home	**α-HBCDD**	**β-HBCDD**	**ɣ-HBCDD**	**ΣHBCDDs**	**α-/ɣ-HBCDD**
H1	8.8	<LOD	5.5	14.9	1.6
H2	59.5	4.7	19.7	83.9	3.0
H3	12.4	>LOD	8.4	21.3	1.5
H4	28.8	5.3	11.6	45.6	2.5
H5	22.5	<LOD	14.6	37.8	1.5
H6	36.2	10.4	21.2	67.9	1.7
H7	8.9	<LOD	4.2	13.7	2.1
H8	<LOD	<LOD	6.2	7.4	0.1
H9	27.4	<LOD	11.3	39.3	2.4
H10	28.8	3.6	12.3	44.6	2.3
H11	74.7	11.2	32.3	118.2	2.3
H12	<LOD	5.3	4.3	10.2	0.1
H13	<LOD	4.1	5.0	9.7	0.1
H14	31.8	2.9	10.5	45.2	3.0
H15	<LOD	5.3	5.0	10.9	0.1
H16	13.6	2.2	6.7	22.4	2.0
H17	22.9	6.0	8.1	50.1	2.8
H18	14.7	9.6	8.5	32.8	1.7
H19	37.1	12.7	12.2	62.0	3.0
H20	9.3	8.7	8.3	26.3	1.1

Country	Reference
Iraq	This Study (FD)
Kazakhstan	Abdallah et al., 2016
Korea	Kweon et al., 2018
Vietnam	Tue et al., 2013
China	Wang et al., 2018
Nigeria	Abdallah et al., 2016
UK	Drage et al., 2020
France	Abdallah et al., 2016
Sweden	Sahlström et al., 2015
New Zealand	Ali et al., 2012
Norway	Tay et al., 2017
Germany	Fromme et al.-2014
Ireland	Wemken et al.,2019
Portugal	Coelho et al., 2016
Czech Republic	Kalachova et al., 2012
Romania	Dirtu et al., 2012
Belgium	Roosens et al., 2009
USA	Stapleton et al., 2014
Canada	Abdallah et al., 2008 a
Antarctica	Chen et al., 2015

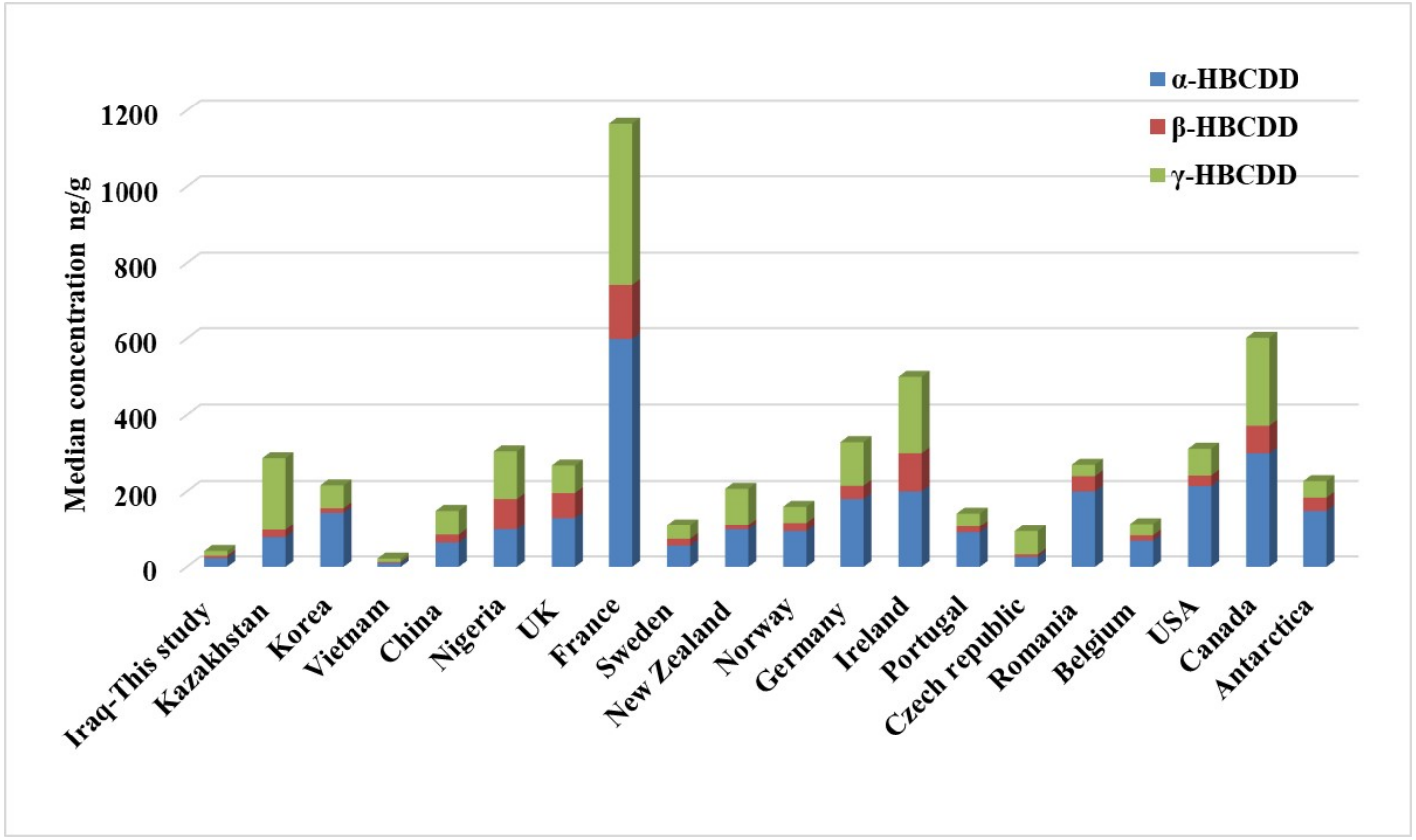

Figure S1. Global comparison of HBCDDs in indoor dust

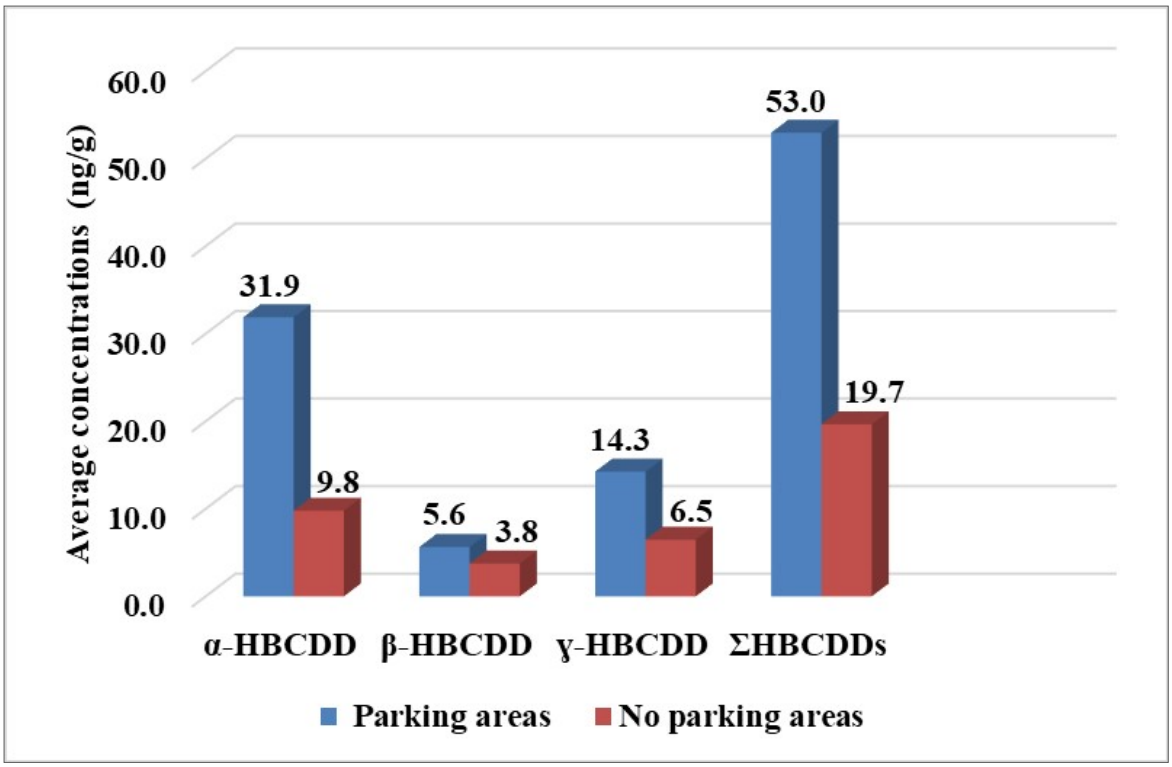

Figure S2: Average concentrations of α-, β-, γ-HBCDD and ΣHBCDDs in outdoor dust samples from homes with care parking areas and non-parking areas

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